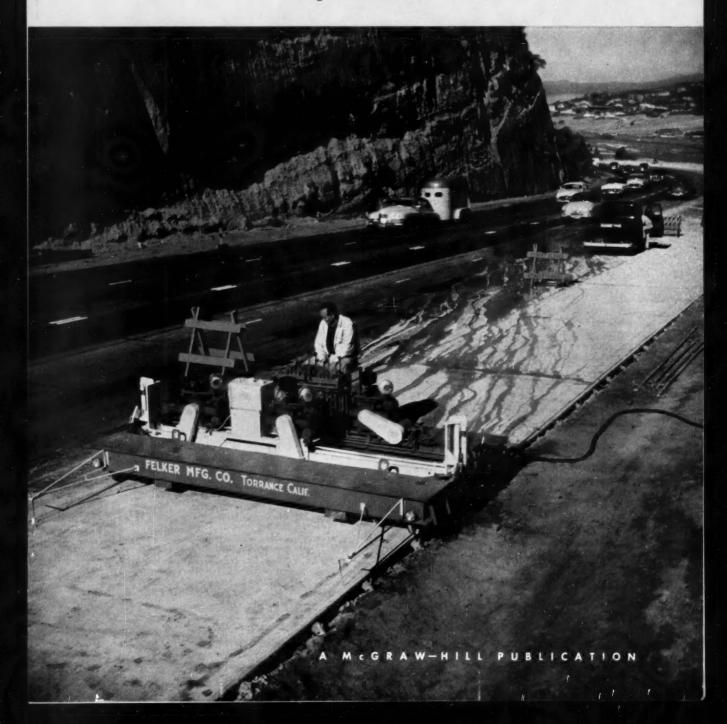
50 CENTS

# CONSTRUCTION

METHODS AND EQUIPMENT

April 1954





...mean faster loading, traveling, spreading

MORE POWER...GREATER
TORQUE PAYS OFF IN
MORE PRODUCTION
FROM EVERY UNIT

The extra piston displacement in Buda Dyna-Swirl Diesels gives your equipment more power and higher torque... resulting in more trips per hour and lower costs per yard of dirt moved. Buda Diesels are heavy duty workhorses—built to stand up to tough service... to keep delivering maximum horsepower with less maintenance and downtime.

You need all the power you can get for dozers, scrapers, tractors, shovels and trucks—and you can get *more* power from Buda Diesels.

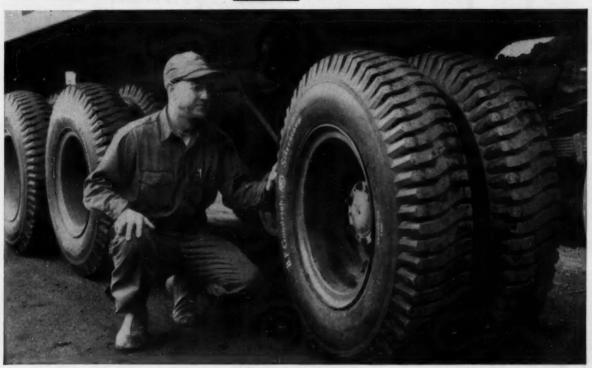


6-DAS-844 Supercharged 280 HP at 2100 RPM

- 12 to 18% MORE HORSEPOWER at normal operating speeds
- 10 to 17% HIGHER USEABLE TORQUE for greater lugging ability
- Dyna-Swiri Combustion gives more power per gallon of fuel . . . less fuel for more power
- 6000 or more hours of operation between overhauls
   . . . lower maintenance costs per hour of operation
- Smooth, quiet operation . . . less exhaust fumes and smoke . . . less vibration . . . more operator comfort



# B.F.Goodrich announces a new All-Purpose tire



# **Built upside-down** to resist bruises—wears longer

THE upside-down All-Purpose con-struction guards against bruises that often start with the inside ply. Look at the cross section of the new B. F. Goodrich All-Purpose truck tire below. The patented BFG nylon shock shield (1) under the tread protects the All-Purpose body from smashing road shocks.

The breakers (2) between the bottom plies are a unique All-Purpose feature. An ordinary tire is built with all the breakers on top of the plies, where heat is most likely to develop. Breakers in the All-Purpose form an extra shock shield, add no bulk under the tread, instead add bonus miles of



ALL-PURPOSE TIRES begin the trip from coal tipple to customer over rugged mine roads as well as paved highways. The All-Purpose tread is compressed to resist abrasion in this tire-killing work.

service and give more recappable tires.

B. F. Goodrich has built the All-Purpose tread as much as 67% deeper than that of a regular tire! Yet the All-Purpose costs only a little more. The center rib widens as the tread wears. More and more rubber contacts the road, decreasing the rate of wear.

#### Cleats are curved

And the massive All-Purpose cleats are curved for greater gripping action in the rough. "Buttons" on alternate cleats defy slippage. You get longer wear on or off the pavement.
See the new All-Purpose tire at your

B. F. Goodrich retailer's. Available in all-nylon or rayon construction (rayon at lower prices). The address is listed under Tires in the Yellow Pages of your phone book. Or write The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, O.

> Specify B. F. Goodrich tires when ordering new trucks



# Light construction levels

... by White



... such accuracy and dependability at so low a cost

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Small, compact and sturdy, these White levels are exceptionally simple in design and construction. And it's this rugged simplicity that makes them extra reliable and trouble-free.

Model 8020 features 10-power telescope, 2½" long graduated spirit level and 4½" diameter circle graduated in degrees and numbered in quadrants (0-90-0), with an index pointer.

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Model 8022 convertible - allows you to level and plumb from same setup. Features 10-power telescope, 21/2 graduated spirit level, 2½" graduated vertical arc and a 4½" diameter horizontal circle. Price: \$74.00\* complete

For complete details, write for DAVID WHITE Bulletin 1053 and name of nearest dealer, 343 W. Court St., Milwaukee 12, Wis.



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### CONSTRUCTION

# **METHODS**

AND EQUIPMENT

Established 1919

April 1954

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#### On the Cover ...

This busy stretch of the Torrey Pines Highway near San Diego will be far safer when Griffith Co., Los Angeles contractor, completes its widening job. Helping speed completion is a Felker Di-Met machine whose two 12-in. saws cut contraction joints 13/4 in. deep across the 12-ft slab in 75 sec. Total over-all time per joint is only 3 min, including a self-propelled move to next joint

An editorial index of articles published in Construction Methods and Equipment during 1953 is available to readers and libraries. Copies will be mailed free of charge—only upon request. The index has been published separately, does not appear in any issue of the magazine.

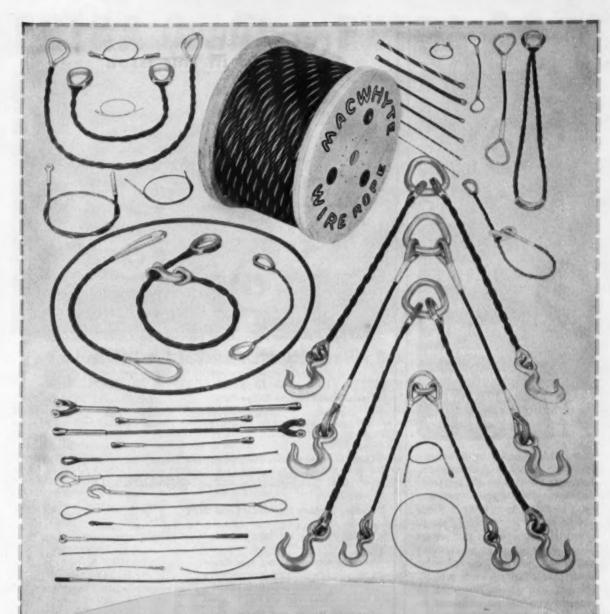
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APRIL, 1954

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	cast, prestressed and cure slab ahead of erection cre	purlins and wall panels are id in progression on floor in areas with aisles left and cranes to move about.	
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MONTH

Concrete piles, cast in place close together in drilled and broached holes, act as sheeting to hold the banks of a Houston excavation. See how, in May.

# EXTRA Quality...EXTRA Speed



## Six Firesafe Concrete Dormitories on Cornell's Beautiful Campus Erected with 'Incor' at Average Rate of a 5-story Frame every 11 Working Days

• Last Fall, six five-story dormitories-reinforced-concrete frames for utmost firesafety, speed, economy-were erected in record time on Cornell University campus: Foundations started August 13 . . . 1st floor concreted September 8 . . . last roof slab poured November 18, ahead of cold weather . . . 66 working days from first foundation to last roof slab (average, 11 days per building) . . . with foundations ranging from rock to caissons. Good job planning and dependable 'Incor' high early

LONE STAR CEMENTS COVE

THE ENTIRE CONSTRUCTION FIELD

strength assure extra speed at less cost. Extra quality, too: You see it in the easy-placing mixes . . . in smooth exposed concrete surfaces . . . in minimum drying shrinkage . and in the intangible but important difference that the crew, conscious of quality on an 'Incor' job, gets the most out of the concrete.

Over 25 years' performance, on job after job, clearly shows that 'Incor' produces more dependable results, at less cost, than by experimenting with "an extra bag of

ordinary cement in the mix."

One contractor summed it up

on the job.

by saying that he sleeps sounder at night with 'Incor's \*Reg. U.S. Pat. Off.

Shrinkage of 'Incor' concrete is the same or less than concrete with Type I cements, through a wide range of equivalent mixes. 'Incor' develops greater strengths at early and later ages and is therefore better able to withstand shrinkage stresses. On the job, proper curing, starting at the earliest possible time, reduces shrinkage effects with all types

MEN'S DORMITORIES. CORNELL UNIVERSITY Ithaca, N. Y.

Architects & Engineers: CHAPMAN, EVANS & DELEHANTY, New York City

General Contractor: C. E. YOUNGDAHL & CO., INC., Long Island City, N. Y.

Ready-mix 'Incor' Concrete: RUMSEY-ITHACA COMPANY, Ithaca, N. Y.

#### DRYING SHRINKAGE OF CONCRETE

Tests of 3x3x12-inch concrete beams , cured in air of 50% relative humidity at 70°F, after 1 day in mold. Results are average of 3 specimens for each cement from batches mixed on different days.

Mix	Water	Drying Shrinkage — inches per 100 ft.					
hags/cu.yd.	gai./bag	34	7.6	28 d	3 mo.	f yr.	
Avi	erage 10 L	one Star	Type I Ce	ments (6-	inch slum	p)	
3½ 4¼ 5 6 7½	10.59 8.27 6.78 5.62 4.65	.156 .156 .18 .168 .156	.264 .24 .252 .228 .228	.516 .516 .528 .48 .468	.612 .624 .66 .636	.648 .684 .696 .684 .696	
A	verage 10	'Incor' Ty	pe III Ce	ments (6-	inch slum	9)	
3½ 4¼ 5 6 7½	10.48 8.29 6.9 5.83 4.93	.156 .156 .144 .156 .156	.252 .216 .216 .228 .24	.516 .48 .468 .444 .48	.648 .636 .636 .636 .648	.672 .672 .672 .684 .708	



BOSTON . CHICAGO . DALLAS . HOUSTON . INDIANAPOLIS KANSAS CITY, MO. . NEW ORLEANS . NEW YORK . NORFOLK PHILADELPHIA . RICHMOND . ST. LOUIS . WASHINGTON, D. C. LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 136,000,000 SACKS ANNUAL CAPACITY

# It's Your Business ...

# Signs Point to Upturn in Contract Awards

IF YOU'RE in the same boat with other contractors who are signing up new business at a slower rate so far this year than a year ago, you can breathe easier.

While competition will remain keen and force you to continue figuring bids closely, indications are that the volume of new business is going to increase. Contracts awarded so far in March already show signs of an upturn from the lows of January and February.

There's nothing sensational in the upturn so farprivate and state and municipal contracts are each running 27% under the March '53 rate and federal volume is down 56%. However, contracts for private work are up 26% over the January-February average, and state and municipal awards show an 18% rise. The dark spot in this picture is federal work, which is slumping further this month and to date in '54 has fallen to the lowest level in contract dollars since 1947.

#### Proposed Work, Financing Are High

In addition to the higher level of contracts this month, the heavy volume of new proposed work and of new financing for construction also indicates an imminent rise in new business.

The fast rate that new proposed work is flowing into the backlog continued in February for the fourth consecutive month. While new work is piling into the backlog at a fast clip, projects have been moving out of the backlog and going under contract at a much slower pace. The result of this situation is a rapid build-up of pressure of work in the planning stage. Of course, it's impossible to judge how soon a project will go under contract after it is reported as proposed. But a rapid increase in proposed work accompanied by a slowing down of the flow into contract usually leads to an increase in contracts within six months.

As of the end of February, the backlog of heavy non-building construction reached a new all-time high of \$37.9 billion, 8% higher than a year ago. The buildings backlog was up 6% over February '53 to a record \$37.5 billion.

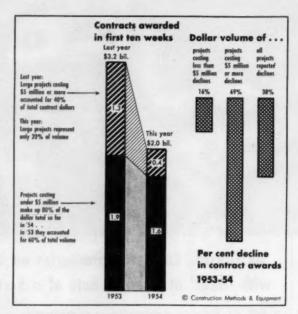
#### Schools Lead Rise In Public Works Financing

Also a good tip to an upturn in business is the 7% rise in state and municipal bond sales for non-building construction. Although bond sales for building construction are off 2% from a year ago, school bond sales are setting a record-breaking pace. School bonds marketed to date total \$321 million, 60% above the previous high of last year.

Corporate security sales for construction money are not setting any new records so far this year but they are only 4% under the record level of a year ago.

#### **Small Contracts Spread Out Work**

Spreading out available work in small contracts has eased the impact of the slow start in '54. The chart shows how the dollar value of projects costing \$5 mil-



DEARTH OF LARGE PROJECTS accounts for most of the decline in new business so far in '54 . . . available work is spread widely in contracts under \$5 million.

lion or more is down 69% so far in '54, but smaller jobs, those costing under \$5 million, are down only 16%. This is a good thing for contractors because it means that new business is being spread widely and they have a better chance of getting a contract than if large jobs made up of a higher percentage of total heavy construction volume. So far this year, the smaller jobs account for 80% of total contract volume compared to only 60% in the '53 period.

#### Other Indicators Reflect Slow Construction Start

The lower contract volume so far in '54 shows up in declines in materials shipments, equipment sales and employment, while contractor failures are up.

Shipments of portland cement in January and February were off 18% from a year ago, while lumber shipments were down 14%. Fabricated structural steel shipments were also lower than in the '53 period, although they dipped only 0.5%.

Construction equipment shipments fell steeply in the third and fourth quarters of '53, and the first quarter of this year may show a further decline. The tip-off could be the report by Caterpillar Tractor Co. that its January sales were 16% under January '53.

Another indication of the effects of lower contract volume is the decline in employment on contract construction during January and February. While part of this is due to seasonal factors, the average employment reported by the Bureau of Labor Statistics during these two months was 2% under the '53 period. As recently as December, employment was slightly higher than the year-ago figure.

Contractor failures so far this year show the effects (Continued on page 8)

# These Advantages Make a ROCK SHOVEL

One of Savin
Construction Company's four
Northwests on the New York
Thruway.

Here's another Northwest in Rock—one of over 80 Northwests on the New York Thruway—a large percentage of them in Rock.

Any shovel can dig dirt but Northwest has developed a combination of advantages that make even a tough job like this fast. The Northwest Dual Independent Crowd, the "Feather-Touch" Clutch Control, Uniform Pressure Swing Clutches, The Cushion Clutch, Cast Steel Machinery Bases and Side Frames, and other Northwest advantages combine to make Northwest a Real Rock Shovel. If you have a rock job don't be satisfied with less than a Northwest. Let us tell you the whole story.

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NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS - CRANES - DRAGLINES - PUBLISHOVELS

of stiff competition for a shrinking volume of new business. In the first two months of this year failures are up 19% over '53. This is a continuation of the trend during '53 when unrealistic bidding caused some of the newer and relatively inexperienced contractors to fold.

Of course, the 195 contractors reported by Dun & Bradstreet as going under so far in '54 is only part of the total number of firms which fail to stand up. This is because contractors on heavy construction jobs are usually bonded by surety companies to guarantee completion

of the project. A check with a central agency for surety firms reveals that the first signs of an increase in losses on bonded contractors began to appear some time in the final quarter of this year. While two of the largest surety firms contacted said that their loss experience on contractors was not increasing, one admitted that his firm was "lucky." There was general agreement that large, well-established contracting firms are holding their own and that losses cropping up around the country involve smaller, newer entries into the construction field.

#### Some Big Jobs of the Month

J. Rich Steers Co., 17 Battery Place, New York 4, N. Y. Marine transfer station at New York for the Department of Public Works, Municipal Bldg., New York 7, N. Y. \$2,036,000.

Roediger Construction Co., 1737 Euclid St., Cleveland, Ohio, Cleveland Clinic Hospital addition for the Cleveland Clinic Foundation, 2020 East 93rd St., Cleveland 6, Ohio. \$4,000,000.

Raylin Construction Corp. and The Lynn Corp., 11 West 42nd St., New York 36, N. Y. New York State Thruway-Hudson Section Subdivision 10 (Tuckahoe Road-Tarrytown, Pt. 2), access ramps; Mountain Road, 0.73 mi access, 0.42 mi Thruway, Westchester Co. for New York State Bureau of Contracts & Accounts, The Governor Alfred E. Smith Office Bldg., Albany, N. Y. \$3,119,288.

Fruin-Colnon Contracting Co., 1706 Olive St., St. Louis 3, Mo. 5,000,000 -bu reinforced concrete grain elevator on Alton & Southern RR., near East St. Louis, Ill. for Cargill, Inc., Merchants Exchange Bldg., St. Louis 2, Mo. \$3,000,000.

Sollitt Construction Co., Inc., 301 Columbia St., South Bend, Ind. Contract 11, sewage treatment plant and interceptor sewers at South Bend, Ind. for the Board of Public Works, City Hall, South Bend. \$5,587,044.

Booth & Flinn Co., 1942 Forbes St., Pittsburgh, Pa., Contract No. 3, anchorage structures for suspension bridge over Delaware River between Packer Ave., Philadelphia, and Gloucester City, N. J. for Delaware River Port Authority, Administration Bldg., Camden, N. J. \$3,647,075. Sanders Construction Corp., 415 Congress St., Portland, Me. steam power plant on Birch Point-Cousins Island, Yarmouth, Me. for Central Maine Power Co., 9 Green St., Augusta, Me. \$19,000,000.

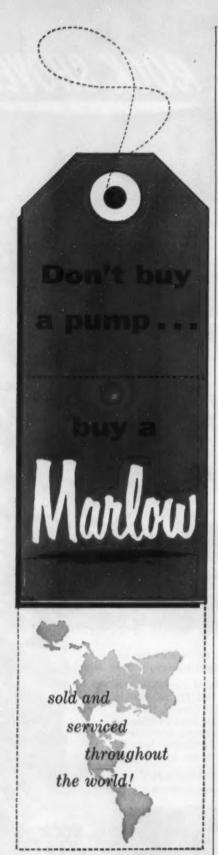
Howard S. Wright Co., Inc., 407 Yale Ave., N., Seattle, Wash., and American Pile Driving Co., Everett, Wash., paper plant addition to house two additional paper machines for Scott Paper Co., Everett, Wash. \$10,000,000.

Gibbs & Hill, 461 8th Ave., New York, N. Y. Design and construct sixth unit White River power plant at Centerton including 105,000 kw generating unit at Indianapolis, Ind. for Indianapolis Power & Light Co., 17 N. Meridian St., Indianapolis 6, Ind. \$14,600,000.

MacDonald, Young & Nelson, Inc., 351 California St., San Francisco, Calif. and Morrison-Knudsen Co., 74 New Montgomery St., San Francisco, ramp construction revision of distribution structure on Oakland approach, San Francisco-Oakland Bay Bridge, Alameda and San Francisco Counties, for State Division of Highways, Public Works Bldg., Sacramento, Calif. \$5,600,000.

Bethlehem Steel Co., East 3rd St., Bethlehem, Pa. Contract 6; suspended structure and decks for Delaware River Bridge between Philadelphia and Gloucester City, N. J. for Delaware River Port Authority, Administration Building, Camden, N. J. \$7,666,264.

J. W. Moorman & Son, Belmont, Tex., constructing an earth dam for Buford Dam on Chattahoochee River, Buford, for U. S. Engineers, P. O. Box 1169, Mobile 7, Ala. \$1,763,064.



MARLOW PUMPS . RIDGEWOOD, NEW JERSEY



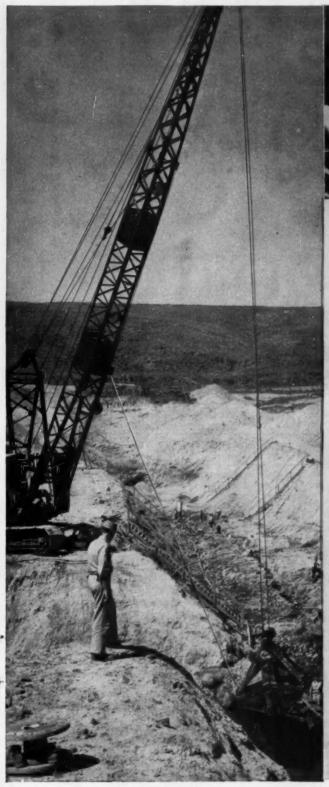
**300,000,000 GALLONS OF WATER IN 15 DAYS**—That's the record four dependable, trouble-free Marlow Self-Priming Centrifugal Pumps set when they dewatered the *world's largest natural drydock* at Grassy Point, New York. The contractor, Merritt-Chapman & Scott Corporation of New York City, barge-mounted the four 10" engine-driven Marlow Contractor's Pumps to speed the lake drainage job and finish the project *three days ahead of schedule!* 

# mariows are dependable!

Bidding on construction jobs is getting more and more competitive. That's why contractors make doubly sure cost and time estimates are right, to get the job and show a profit. When it comes to pumping, dependable Marlow Self-Priming Pumps never let them down . . . work goes through on schedule. For complete data on AGC rated pumps and Marlow "Mud Hogs," see your Marlow dealer or write for Bulletin C-52.



# ON CLAMSHELLS AND DERRICKS





HOIST LINE

#### **Designed to Out-perform Any Rope Construction** You've Ever Used For Crane Hoisting!

No doubt you've used several different rope constructions on different crane hoisting operations. Now, there is an entirely new construction for crane hoisting purposes which gets you out of complicated specifications in ordering and enables you to keep your reserve rope stock down. to the very minimum.

Tuffy Hoist Line is now on the market because no other rope construction could stand up to it through many months of testing in the unmatched Union Wire Rope laboratory. More months of field testing, under tough operating conditions, proved to machine operators the superiority of Tuffy Hoist Line over the best rope constructions they had ever used for Crane Hoisting.

That is the best way for you, too, to see how much longer Tuffy Hoist Line will run on your clamshells, derricks and cranes. All your distributor needs besides the name Tuffy is the diameter and length.

# Tuffy DOZER ROPE

Increase your dazer rope service by mounting a 150° reel of Tuffy on your dazer. Feed through only enough to replace section damaged on the drum. Available in 1/2" and 9/16".

# Tuffy SCRAPER ROPE

Flexible enough to withstand sharp bends...stiff enough to resist looping and kinking when slack! Tuffy DRAGLINES

Maximum abrasive resistance, extra flexibility! Rides better on grooves, hugs drum when casting!



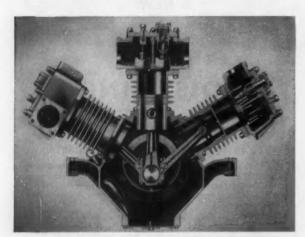
# If you believe

# ALL COMPRESSORS ARE ALIKE...

			in the same	and the second section of the sect
600	134	202	68	33.7
315	75	117	42	35.6
210	51	78.5	27.5	35
160	37	57	20	35
105	25	42.5	17.5	41.6

# check these three points

1. RESERVE POWER. There's plenty of that built into every Blue Brute. That means it takes thousands of hours of normal operation before engine wear affects the compressor's output.



2. EASY MAINTENANCE. All parts of the Blue Brutes are readily accessible. No special tools or complicated disassembly procedures are needed. And the compressor uses the same oil as the engine.

60 <sup>1</sup>	GASOLINE	1.31	1.42
105'	GASOLINE	2.16	2.35
	DIESEL	1.66	1.73
160'	GASOLINE	3.18	3.44
	DIESEL	2.45	2.60
210'	GASOLINE	4.32	4.70
	DIESEL	2.89	3.06
315'	GASOLINE	6.25	6.75
	DIESEL	4.38	4.64
600'	DIESEL	6.30	9.20

3. FUEL ECONOMY. How does your compressor stack up in comparison with the Blue Brute for economical fuel consumption? The figures shown have been determined under normal field operating conditions.

Get all the facts about the Blue Brute from your nearest Worthington distributor. Or write to Worthington Corporation, Portable Compressor and Contractors' Tool Division, Section H.3.6, Holyoke, Mass.

# WORTHINGTON

IF IT'S A CONSTRUCTION JOB. IT'S A BIVE BRUTE JOI



H.3.0

ROCK DRILLS \* WAGON DRILLS \* PAVERS \* CONCRETE MIXERS \* PORTABLE PUMPS



# Thermoid Hose designed specifically for construction jobs

Intermold Rubber Products

Thermoid designs and manufactures many types of hose built to give longer service and lower operating costs in a wide variety of specific applications. Here are three that are ideal for rugged construction work:

THERMOFLEX

Mandrel-built air hose for extreme service and direct connection to compressors. Smooth, black abrasion-resistant cover.

VERSICON

Most versatile hose ever developed. Handles air, water, oil, gasoline, dilute acids and gases. Ideal for use with air-operated tools.

# 325 CL SUCTION HOSE Heavy duty wrapped hose reinforced with rugged wire enclosed in a woven cord carcass. Long wearing tube and cover resists weather and abrasion. Can be restored to shape after crushing.

Thermoid research is responsible for new, better hose construction that makes Thermoid Hose more durable . . . easier to handle. Ask your Thermoid Distributor for the hose best suited for your requirements. Or if you prefer, write direct for catalogs.





UNDERWOOD & UNDERWOOD

Conveyor & Elevator Belting - Transmission Belting F.H.P. & Multiple V-Belts - Wrapped & Molded Hose



Rubber Sheet Packings - Molded Products Industrial Brake Linings and Friction Materials

Thermoid Company · Offices & Factories: Trenton, N. J., Nephi, Utah

# Announcing a \$10,000 guarantee on used equipment!



Your Caterpillar Dealer now offers you a "BONDED BUY" on used Caterpillar-built equipment backed by a bond of \$10,000. This bond is issued by The Travelers Indemnity Company. Your dealer gives you this protection when you purchase a "BONDED BUY" machine.

This is the *first* time in the heavy-duty machinery field that such an offer has ever been made!

And that's not all. You are also offered two other classes of used equipment buys—"Certified Buy" and "Buy and Try." These cover used equipment of any make.

What does this mean to you? First of all, it takes the guess and gamble out of buying used equipment. You know what you're getting. And your assurance is in writing! What's more, no matter what your needs, cost-wise or work-wise, you have a choice of used equipment to meet them.

Only your Caterpillar Dealer offers you this across-the-board selection—"Bonded Buy," "Certified Buy" and "Buy and Try" used equipment. The best source of new machines, he's also your best source of used machines—tractors, engines, motor graders and earthmoving units.

Whether you're in the market for one machine, a few or many, he's the man to see for your best buy. See him today for complete details on guaranteed used machines!

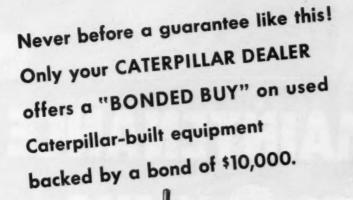
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

DIESEL ENGINES • TRACTORS • MOTOR GRADERS

EARTHMOVING EQUIPMENT





The Travelers Inden

Master Guara

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#### DON'T GUESS OR GAMBLE ON USED EQUIPMENT!

You KNOW what you're getting at your CATERPILLAR DEALER

Your Caterpillar Dealer offers you three clear-cut classes of used equipment. He backs each one in writing. You buy with confidence, sure that the equipment is honestly described. See him for the best used values on the market:

(1) "BONDED BUY." Only the best in used Caterpillar-built equipment. Each "BONDED BUY" machine is backed by a Dealer's Guarantee Bond equal to the purchase price of the machine up to a maximum of \$10,000. This provides a guarantee for thirty days against unsatisfactory performance due to defective parts. If a part should prove defective within the guarantee period under the normal conditions of your job and with proper maintenance, your dealer will put your machine back into operating condition with no charge to you

for parts and labor up to the amount of the bond. The Dealer's Guarantee Bond is backed by The Travelers Indemnity Company. Your Caterpillar Dealer gives you this protection with your purchase of a "BONDED BUY" machine. Look for the "BONDED BUY" symbol—it's your assurance of the best in used equipment.

- (2) "CERTIFIED BUY." Next best buy in used equipment: "Certified Buy" covers machines of any make in good condition. Your performance guarantee is in writing backed by your Caterpillar Dealer.
- (3) "BUY AND TRY." Bargains in used machines of any make. Buy and try them for a period mutually agreed upon by you and your Caterpillar Dealer. Each "Buy and Try" machine carries his written "moneyback" agreement.

"BONDED BUY" assurance effective in the United States

# CUT MAINTENANCE COSTS 3 WAYS



TUNE IN:
METROPOLITAN OPERA
radio broadcasts
every Saturday afternoon
See newspaper for
time and station.

TEXACO

YOU CAN DO IT with Texaco Marfak—the world famous chassis lubricant that (1) won't squeeze or jar out of bearings; (2) assures protection against wear and rust; (3) lasts longer, requiring fewer applications. Thus, Texaco Marfak saves you money on parts replacement — keeps equipment on the job longer — reduces lubrication expense.

You obtain similar cost-reducing protection for wheel bearings when you use Texaco Marfak Heavy Duty. It seals out dirt and moisture, seals in its tough, protective lubricating film — assuring safer braking. No seasonal change is required.

# MORE THAN 500 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD

For crawler track mechanisms, you can't beat Texaco Track Roll Lubricant. It protects against dirt, water and wear—assures longer parts life, lower upkeep costs.

Let a Texaco Lubrication Engineer show you how to simplify your lubrication practices, reduce your maintenance costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



# Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



- Powered by 275 HP (ASME peak rating) Cat Diesell
- Anything that goes in will come out!
- Low height, wide body for fast loading!
- · Hydraulic steering retains feel-of-the-road!
- Operated by powerful Athey 3-stage telescopic hoists!
- Heavy draft frame of 34" and 1" steell
- 24:00 x 29 36-ply rock-grip tires provide traction-flotation!





LOADING... Wide-mouthed body (14' x 10') makes an easy target for fast-swinging shovels. Bottom is a sandwich—34" high-strength steel top plate, oak-plank filler, ½" bottom plate. Heavy side sheets are reinforced with box-sections.

HAULING . . . Hauls are made at speeds up to 20 MPH. Low center of gravity and wide tread (123") provide exceptional stability at high speeds. Positive, hydraulic steering control keeps the operator in command of the unit. Body design allows capacity load without spillage.





# the NEW ATHEY PR21

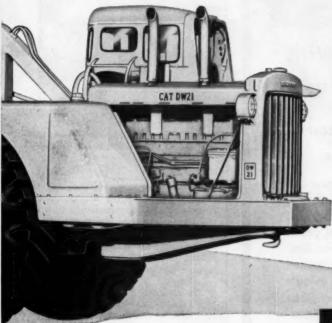
# REAR-DUMP TRAILER

The rock-hauling companion for the CAT DW21 Tractor!

The high-speed Cat DW21 has a new production teammate—a hydraulically-controlled trailer that can take on a heaped load of hard rock, haul at speeds up to 20 MPH, and dump the load over steep banks in complete safety. The new high-production, high-profit, rear-dump hauler is the Athey PR21 Trailer.

The PR21 is built of high-strength steels to take anything rock can dish out. All-welded, frameless design reduces and absorbs the twist and torque of rock loading, hauling and dumping. The PR21 matches its DW21 teammate in capacity, performance and dependability—a combination that pays off in production and profits.

Your Athey-Caterpillar Dealer has complete specs and performance data. See for yourself why the new PR21 assures trouble-free work schedules and profitable production. Call on him or write direct to



**DUMPING...** Body tilts, under bydraulic control, 60° to dump any load cleanly. Individual 22" x 7" tractor and trailer brakes provide extra margin of safety. 90° turns eliminate lengthy maneuvers on the fill, permit turns in 34 feet!



PRODUCTS CORPORATION

5631 West 65th Stree Chicago 38, Illinois

ATHEY—Pioneers and Specialists in the Trailer Field!



Athey Products Corporation 5631 West 65th Street Chicago 38, Illinois

DEPT. CME-44

Please rush specs and literature on the new high-production PR21 Rear-Dump Trailer.

☐ Have my dealer's representative call on me with information.

Name\_\_\_\_\_

Company

Address.\_\_\_\_

City\_\_\_\_\_State\_\_\_\_



# Don't Take Chances With "Make-Shift" Braces

# get safe, dependable, low-cost <u>Duff-Norton</u> Trench Braces

Cave-ins of trenches and other excavations can be dangerous and costly. Don't take chances with old timbers or other make-shift devices. See your local distributor for details on prices and delivery of the various types of precision-made, sturdy, Duff-Norton adjustable trench braces and timber fittings... or write the world's oldest and largest manufacturer of lifting jacks for bulletin AD-17T. The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant—Toronto 6, Ontario.



## \* JOB TALK \*

# ...About Double Digging



CORAL ROCK BREAKS into fine material after second excavation following trenchers—makes good fill for pipe trench.

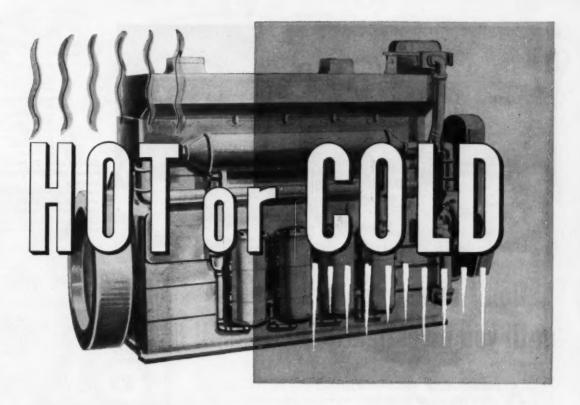
DOUBLE TRENCHING and backfilling immediately behind the trenchers as they proceeded down the street—without laying any pipe or other structure in the open ditch—recently had Miami, Fla., sidewalk supers scratching their heads. But the operation makes a lot of sense.

A \$717,000 storm sewer contract was awarded to contractors Blythe Brothers of Charlotte, N. C., and W. T. Price Co. of Miami. In this Florida area, the ground is a half-hard coral rock which makes an excellent gravel-like backfill material when excavated and rehandled properly so that it breaks into small sizes.

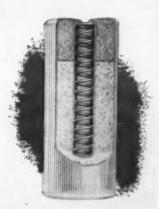
Concrete pipe ranging in diameter from 72 to 12 in. was laid. For the larger sizes, the contractors had a Big Incher trencher take a cut 40 in. wide down the right-of-way. It was followed by a big Buckeye taking a 52-in. cut alongside, leaving only a thin center wall standing between the two cuts. The trencher cutting action broke the coral down pretty well, but it was dozed back into the ditches immediately.

Hard on the heels of the trenchers followed a Northwest backhoe. It shoveled out the refilled coral, broke out the undisturbed middle strip and deepened the ditch in

(Continued on page 24)



# PROTECTED AT ALL TIMES



CP\* Controlled Pressure elements are the subject of an interesting and helpful booklet, that can save you money. Write for your copy today—it's free, of course. You know that engines are completely protected only if the lube oil is filtered under all conditions. It is essential that dangerous particles be removed when the oil is cold and viscous, just as it is under normal operating temperatures. When you have less than full-flow filtration, you may not be protecting critical surfaces, if a part fails or if oil is contaminated at the start, because the oil is by-passed around the filter element.

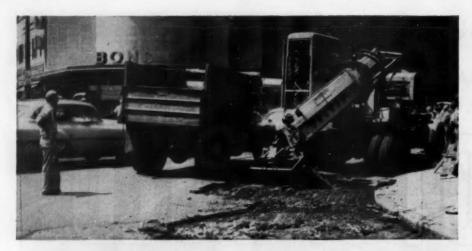
In a Winslow CP\* element, cold oil immediately flows through the coarser section of filter material, which accepts the oil and removes all critical particles. As the temperature rises, more of the oil flows through the dense section of the element, assuring complete filtration at all times. The proportion of coarse and dense filtering media has been determined by laboratory research and field testing for each size of filter, and is an exclusive design feature of Winslow CP elements.

Winslow filters are your assurance of longer oil life and maximum engine protection under all operating conditions.

WINGLOW FILTERS

Winslow Engineering Company

4069 Hollis Street . Oakland 8, California



Gradall shows its power, ripping and loading asphalt pavement prior to resurfacing. Even in congested areas like this, traffic interruption is minimized. Gradall similarly removes grouted brick or concrete.

# Don't invest in <u>any</u> machine until you investigate the Gradall!

ANY CONTRACTOR who owns a Gradall will tell you—no other single investment in an earth-moving or construction machine pays off like a Gradall!

A Gradall is always busy—it works more hours per year than any other machine, in all kinds of weather. With its quickly interchangeable attachments it handles more jobs than any other machine. And it works fast—with arm-action accuracy that eliminates costly hand labor. Its maintenance and operating costs are very little more than a truck!

But let your Gradall Distributor show you how a Gradall can make money for you. Call him for a field demonstration on your work.



- · Tranching and backfilling
- Excavating
- Placing tanks, culverts, curbs, etc.

# Gradall makes money on all these jobs...and many more

- Grading and sloping
- Ripping and loading old pavement
- Ditch digging and cleaning
- Hand finishing and clean-up

Gradal

DIVISION OF WARNER
SWASEY
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PRECISION

Gradall Distributors in over 75 principal cities in the United States and Canada

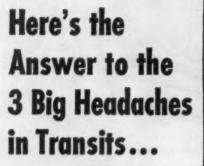


Gradall "team" cuts time and costs on this drainage job. One Gradall digs the trench, the other follows, placing the large tile and backfilling.



For disching and disch maintenance no other machine can match a Gradall. With its selescoping arm-action, operator can easily dig or dress disches he exact grade on bottom and slopes.

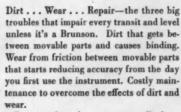








Model No. 50



Brunson has the answer to all three factors: dustproof, ball bearing construction. Dust is sealed out, the lubricant sealed in, and wear is practically eliminated by the smooth ball bearing action. That's why only Brunson instruments maintain their accuracy for years without costly routine maintenance.

Brunson instruments are the new standard of excellence—yet they cost no more. Write today—you'll be glad you did.

BRUNSON

DISTRIBUTED EXCLUSIVELY BY

BRUNING

Everything for the Engineer and Draftsman

CHARLES BRUNING COMPANY, INC. . 4700 MONTROSE AVENUE . CHICAGO 41, ILLINOIS

JOB TALK . . . Continued from page 120

those sections where it had to go deeper than the trenchers were able to reach.

Trench depth in some areas went to 15 ft, but the trenchers could not go much beyond 10 ft. An added advantage of the trenchers in taking the lead was that it was easier to locate and by-pass safely uncharted utility lines underground.

#### Placing the Pipe

A Northwest crane followed the backhoe and lowered the heavy pipe sections into the bottom of the ditch on top of a light layer of pea gravel, dumped ahead of the pipelaying. The hole also loaded left-over fill material into dump trucks for removal. A Hough Payloader assisted in the removal and loading



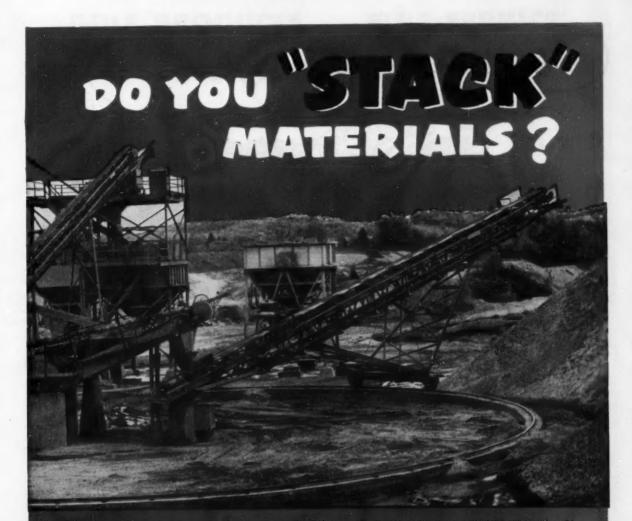
COCONUT JELLY is used to lubricate Riblock rubber gaskets around pipe joint just before big section is lowered to the bottom.

of excess material as conditions called for it.

Compacting in close quarters or parallel to areas carrying heavy traffic was done with a Thor Triplex Tamper powered by an Ingersoll-Rand compressor. But most of the refilling was done quickly and effectively with an International TD-6 crawler mounting a Drott Skid-Shovel up front. The tractor first was used to push backfill into the ditch and then the operator would take his machine right into the big cut, leveling and compacting thoroughly as he moved back and forth.

About 2,000 ft of the 72-in. concrete pipe were used. This came in sections 16 ft long. Other sizes (Continued on page 29)

Page 24 — Construction METHODS and Equipment — April 1954



#### DO IT BEST WITH BARBER-GREENE CONVEYORS!

If you "sinck" or stock-pile materials, quite probably you can executine your operation with a Burber-Green's Stacker Conveyor.

Stacker Conveyors—a Barber Greens development—de liver more material at less cost. First of all, the initial cost is less because you build the system with component selected from the complete, standardized B-G line, eliminating the expense involved in designing and executing a "inilar-marks" system. Secondly, you save during the eyelection of the context to reduced operating costs.

There are three basic stacker conveyors—radial traveling and fixed types—and your B-G distributor is ready to easist you in selecting the kind best cuited to your needs.

#### TYPICAL STACKER APPLICATIONS

- For the stock-piling of bulk materials such as sand, gravel and aggregates
- In mining operations where are or coal is stackpiled to suit market or seasonal conditions
- In material yards, ready-mix plants or coal yards where classification into separate bins or large stack piles is advantageous for meeting peak demands
- For disposal of waste material
- Wherever structural supports in stock pile handlcap operation of reclaiming machines

write for information!

Barber-Greene



Aurora, Illinois, U.S.A.

# Look inside the engine ...



and you'll see why MURPHY DIESEL gives you more power, greater economy and longer engine life...



FOR the most part, engines look pretty much alike from the outside, but to really judge an engine you have to look inside. The Murphy Diesel isn't afraid of comparison. It offers a combination of proved design advantages available in no other engine. Check these features for yourself and ask Murphy Diesel owners—they'll tell you what these features mean in terms of good heavy-duty power, minimum fuel consumption and long engine life.

Additional information is given in the booklet, "10 Questions to Ask a Diesel Engine Salesman". Ask your Murphy Diesel Dealer for a copy or write direct.

#### MURPHY DIESEL COMPANY

5339 W. Burnham Street

Milwaukee 14, Wis.

Sales, parts and service in strategic locations throughout the nation

# GULF PRODUCTS and FINE SERVICE

# keep equipment rolling

on Pennsylvania Highway Project



NOTHER important construction job where equipment is making an outstanding record of dependable performance with the help of Gulf Quality Products and Fine Service.

Here is why Gulf is the preferred supplier of petroleum products to so many leading contractors, like Nello L. Teer Company, for example: Gulf Lubricants provide an extra margin of protection—whether it is hot or cold, wet or dry. And Gulf Fuels help insure full power.

When Gulf Quality Products are combined with expert engineering counsel and prompt delivery service, you have a Gulf package that is bound to smooth the way to greater yardage, better equipment performance, and lower repair costs.

Gulf Quality Lubricants and Fuels—and that Good Gulf Service—are quickly available to you through more than 1400 warehouses in 31 states from Maine to New Mexico.

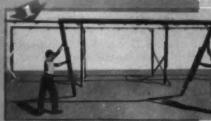


# PROGRESS.

# .. In Shoring Methods

THE BIGGEST IMPROVEMENT

Since the First Concrete Slab was Poured



THE EUS METHOD

Made Possible With These Items
Buy or Rent With Purchase Option



The Elis Clamp



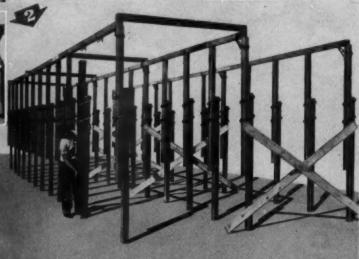
The Ells Jack



The Shorehead Clamp



The Slip-in Shore Holder



#### IT'S AS EASY AS THIS ...

- 1. Inverted "U" assemblies, with Elis Slip-in Shore Holders and Shorehead Clamps in place, are assembled on the ground, then raised into position.
- 2. Slip-in Shores are installed. No scabbing or nailing needed, and no men needed on top.

Fast? You bet! Safe? Completely! And it's all done at tremendous savings over any other method of shoring available today.

WRITE FOR THE FULL STORY NOW!

NO RESTRICTION IN SHORE HEIGHTS

MANUFACTURED BY

THE

IS EQUIPMENT

COMPANY, INC.

211 N.W. Fourth, Oklahoma City, Okla.

were 66 in., 60 in., 54 in., and 12 in. Pipe joints were sealed with Riblock rubber gaskets which were lubricated with coconut jelly before they were brought together. Sections were drawn together for a tight joint with a hand-winch which was operated by a workman inside the big pipe.

#### Lots of Water

In this area, the water table is near the surface, and most of the pipe was laid below the water level. Pumping was done at one location only with a Morgan irrigation-type pump powered by a diesel engine and with a capacity of 300, 000 gph.

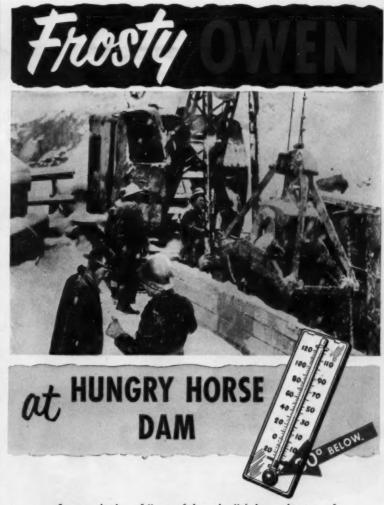
The pump was located in a sump at a point at the end of the storm



LEVEL AND COMPACT is the fill after International TD-6 with Drott Skid-Shovel gets down in and does the job layer-by-layer.

sewer line where it will drain into the Miami River and kept the water under control over most of the project, which drains an area measuring about 7 blocks by 14 blocks in size. Water from freshly opened ditches would flow back to the pump through the pipe as it was laid.

When completed, the new line will drain by gravity for the most part, although there are a few sections that will have to be assisted by three underground pumping stations, electrically operated and with automatic controls to start and stop the pumps according to the rise and fall of the water table. The new area being drained long has had surface water problems and most of the streets formerly were flooded after every heavy rain.



In a majority of "run-of-the-mine" jobs and most of the exceptionally noteworthy projects you'll find Owen Buckets handling important digging and material handling operations.

That is true whether it is a bridge abutment, a dam foundation, caisson work, deep trenching, aggregate handling or "what have you."

The Hungry Horse Dam is an example. Thirty degrees below zero weather didn't stop operations or

hinder this Owen Bucket in performing the desired service required in deep down digging of frozen clay, shale, etc.

You, too, can depend on Owen.

6020 Breakwater Ave., Cleveland 2, Ohio

# NEW CHEVROLET TRUCKS



# They offer more power, more ruggedness, more operating economy... more of everything it takes to trim time and cut costs on tough jobs

Turn over your tough hauling jobs to new heavy-duty Chevrolet trucks and see how they speed up your schedules and shave down your costs! They're built to do more work per day . . . more work per dollar on big load, off-the-road construction operations.

#### HOUR-SAVING POWER

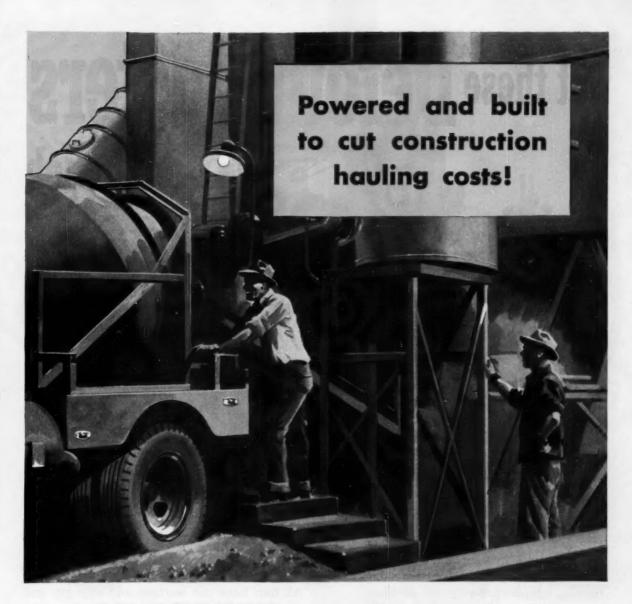
You get the extra reserves of power you want and need—power for moving big loads quickly and efficiently... greatly increased acceleration and hill-climbing ability. The mighty, all-new "Jobmaster 261" engine\* is the most powerful Chevrolet truck engine ever built. And it brings you increased operating economy along with time-saving performance.

#### GREATER CHASSIS STRENGTH

You save on maintenance because these great new Chevrolet trucks are built stronger for longer, lower-cost life. There are highercapacity clutches, stronger rear axles and more rigid frames in all heavy-duty models.

See your Chevrolet dealer soon for all the money-saving facts. . . Chevrolet Division of General Motors, Detroit 2, Michigan.

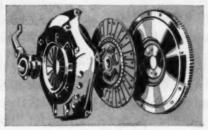
#### CHEVROLET ADVANCE-DESIGN TRUCKS





**New Ride Control Seat\*** 

Seat cushion and back move as a unit to absorb shocks and prevent annoying back-rubbing on or off the road! It's the last word in driver comfort.



Higher-capacity clutch

New design assures positive, full-pressure engagement. Larger facing area in the heavy-duty models provides higher capacity and longer life.



MOST TRUSTWORTHY TRUCKS ON ANY JOB!

Plus all these Advance-Design truck features: THREE GREAT ENGINES—The new "Jobmaster 261" engine\* for extra-heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. HEAVY-DUTY SYNCHRO-MESH TRANSMISSION—DIAPHRAOM SPRING CLUTCH—HYPOID REAR AXLE—TWIN-ACTION REAR WHEEL BRAKES on heavy-duty models. DUAL-SHOE PARKING BRAKE on heavy-duty models. NEW RIDE-CONTROL SEAT\*—NEW, ROOMIER PICKUP, STAKE AND PLATFORM BODIES—NEW COMFORTMASTER CAB—PANORAMIC WINDSHIELD—BALL GEAR STEERING—NEW ADVANCE-DESIGN STYLING.

\*Optional at extra cost. Ride Control Seat is available on all cab models, "Johnaster 261" engine on 2-ton models,

# Put these Detour-Busters



WORKING AGAINST a 20-day deadline, contractors graded and graveled a section of state highway to eliminate a long traffic detour. Here we see one of the fast moving INTERNATIONAL TD-24 and scraper teams that did the job in a hurry.

Let INTERNATIONAL Scrapers break up the slowdowns and delays that cost you money. See how they can put you back on the main road to moving dirt on time, at lower cost.

Keep the dirt flying. That's what they are made for! Everything about these big, easyrunning scrapers points in one direction:

#### More dirt, less time on every cycle.

And how they do it! No detours here: Fast loading of bigger payloads, with less power. Improved flotation. Easy, clean dumps. Short turning radius. Remarkable stability on slopes. Rugged, simple construction that cuts maintenance to the bone!

Choose from four sizes (10 to 27.5 yard heaped capacity) to fit your job and your power. All four have the features and strength and simplicity that speed up the cycle—keep you on schedule, or well ahead of it!

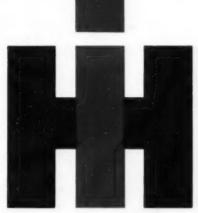
Do you have dirt to move, and cost problems staring you in the face? Then there is a man you ought to know—your IH Distributor. He handles INTERNATIONAL Scrapers and can give you all the facts and figures about them. See him for "Power that Pays."

For every move in Earthmoving
ON TRACKS ...ON RUBBER
See INTERNATIONAL'S
"Job-Phased" equipment

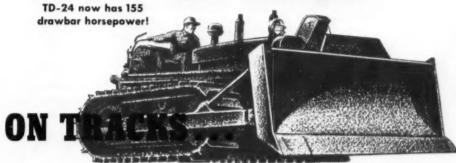


# INTERNATIONAL

\*Phased Equipment—Machines designed and built to handle each major phase of earthmoving most efficiently and economically.



STILL THE CHAMP!





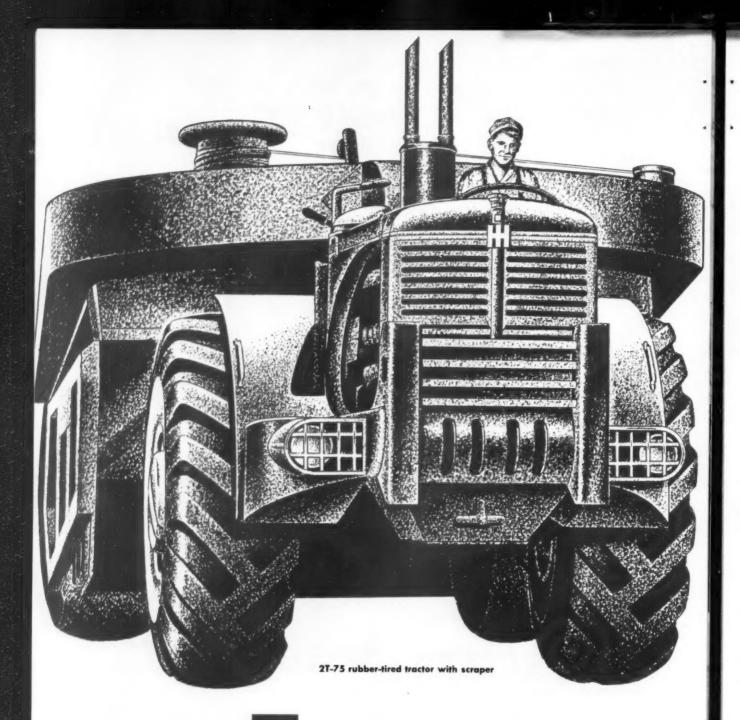
See it now at your INTERNATIONAL Industrial Distributors—a complete line of modern earthmoving equipment, led by the INTERNATIONAL TD-24, "The Champ" of crawler power and by the INTERNATIONAL two-wheel, rubber-tired tractors with scrapers.

Then see it in action on your own job—in a demonstration of INTERNATIONAL "power that pays."

"JOB-PHASED" EQUIPMENT
FOR EVERY MOVE IN EARTHMOVING



INTERNATIONAL



# - For Every

# INTERNATIONAL presents a complete line of "Job-Phased" equipment—on tracks and on rubber for every earthmoving job.

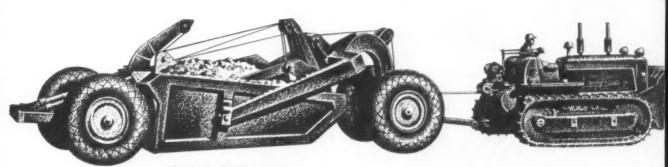
- Seven rugged crawlers, led by the INTERNATIONAL TD-24.
- Twenty-two matching hydraulic and cable-controlled bulldozers and bullgraders.
- · Four 4-wheeled scrapers.
- Two high-speed, two-wheel, rubber-tired tractors with scrapers (13 and 18-yard heaped capacity).
- A high-speed two-wheel, rubber-tired tractor with bottom dump wagon (20-yard heaped capacity).
- Four front-end loaders, for the TD-6 through the TD-18A—tops for excavating, materials handling and general utility work.

All under the INTERNATIONAL banner. All proved on-the-job for dependability and economy. All sold and serviced by men who know construction equipment and construction problems—the finest distributor organizations in the industry.

For full details on the complete line of INTERNATIONAL earthmoving equipment, check with your INTERNATIONAL Industrial Distributor today.



PAYLOAD EXPRESS. INTERNATIONAL 2T-75 rubber-tired tractor with heap-loaded scraper comes roaring around a tight curve in the cut.



TD-24 with B-250 scraper



HOW TO BUILD A DAM FAST. INTERNATIONAL TD-24 crawler dozes and tamps with 4 massive sheepsfoot rollers in a single operation.



INTERNATIONAL

Move in Earthmoving

# Now All in One Family

## the hardest-working work teams in the world!

The new INTERNATIONAL team stars not only a full line of rugged red INTERNATIONAL crawlers, complete with INTERNATIONAL scrapers and bulldozers, but also high-speed INTERNATIONAL two-wheel, rubber-tired tractors with scrapers.

This means that now, more than ever, your INTERNATIONAL Industrial Distributor is

"Earthmoving Headquarters" for your area. He offers you IH equipment to tackle any job, backed up by unsurpassed service facilities and parts supplies.

He's at your call, always, to help keep your equipment rolling . . . to cut down your downtime and pile up your profit-time . . . to serve you with INTERNATIONAL "Power that Pays!"

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS



## INTERNATIONAL

FOR EVERY MOVE IN EARTHMOVING



TD-24 crawler with matched scrapers



TD-18A crawler with matched scrapers



TD-24 crawler with bullgrader



TD-14A crawler with cable bullgrader



TD-9 crawler with hydraulic bulldozer

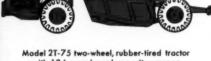


TD-9 tractor



TD-6 crawler with hydraulic bulldozer





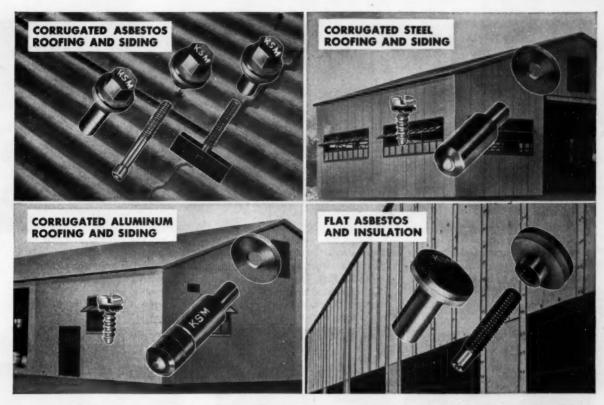
with 18 heaped-yard capacity scraper



Model 2T-75 two-wheel, rubber-tired tractor with 20 heaped-yard capacity bottom dump wagon



Model 2T-55 two-wheel, rubber-tired tractor with 13 heaped-yard capacity scraper



### ROOFING AND SIDING GO ON IN RECORD TIME WITH KSM STUD WELDING AND KORR FASTENERS

The new, specialized KSM stud welding and Korr-Fasteners assure the contractor of the most efficient fasteners for each particular material. Designed for simplicity of application, Korr-Weld studs and pins become an integral part of the steel structural members and last the life of the material they secure.

Installations are made by working only on the outside of the structure and each fastener incorporates new benefits to reduce installation time or provide a more permanent application.

Get the complete story on how KSM roofing and siding application methods can help you. Fill in and mail the coupon today.



... better construction through KSM stud welding methods

### PRODUCTS,

310 Woodland Ave., Merchantville 8, N. J. Merchantville 8-4160

Please send me complete information on the following KORR-WELD **Roofing and Siding methods:** 

- □ Corrugated Asbestos ☐ Corrugated Steel
- ☐ Corrugated Aluminum
- ☐ Flat Asbestos and Insulation

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ADDRESS.....

# HOW GRAVEL SEGREGATION IS CAUSED



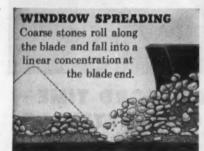
1. When aggregates are transported the bumping and vibration causes the fines (dust, small particles and chips) to sift to the bottom of the load while the larger stone works toward the top and sides.



2. When the load is dumped on the roadway, the material forms in piles. The larger stones roll from the truck first, the fines fall last. The segregated condition is now reversed; the coarse aggregates are in the base of the pile.



3. When the piles are leveled to specified depth, alternate pockets of fines and coarse are formed. Such segregation is highly unstable and a base course so constructed would soon ravel and break up.



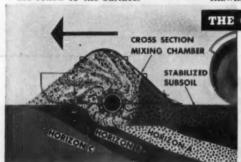
6. In spreading windrows to final crown and grade, a different but very unstable segregation is caused. Fines are found in concentration in the "heart" of the windrow. Some of these remain in a pocket; others sift to the bottom. Stones which are "topped" by the blade, are rolled to the surface.



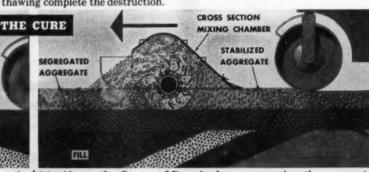
7. A road built with gravel in a segregated condition soon develops rippling, undulations, and a "wash-boardy" condition. Traffic keeps those non-keyed stones in motion. Rain trapped in the hollows seeps through and weakens base and sub-base. Freezing and thawing complete the destruction.



8. SUB-BASE failure is frequently caused by soils of different physical characteristics reacting unevenly to moisture. Here a weak spot is developing just below the base course. This would not occur if sub-base had been processed to blend the soils and eliminate voids.



12. Here the PULVI-MIXER is stabilizing the sub-base by blending the sub-grade soil horizons (A, B, C,) to attain a course which is uniform in moisture, density and thickness. Weak spots such as that shown in the previous four diagrams will not occur and therefore the base will not require maintenance.



13. Above, the Seaman Mixer is shown processing the aggregate for the base, correcting an always-present segregated condition. The material has previously been shaped to final crown and grade. No further blading is needed, for the PULVI-MIXER not only completes the mix but also leaves it in a partially compacted condition, exactly to the grade established, ready for final rolling. This partial pre-compaction is needed because materials left too fluffy are subject to segregation during compaction.

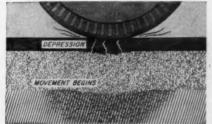
# HOW THE SEAMAN MIXER CORRECTS IT



4. The Seaman Mixer blends out pockets of coarse and fines so that particles of each size, from dust up to the largest stone, are intermixed throughout the base. Voids are filled with fines to mortar-in the keyed and interlocked coarse material.



5. It is essential in eliminating pockets of coarse and fines to cross-mix as well as to mix in a longitudinal direction. Only the Seaman Mixer is capable of this operation which provides complete and uniform material placement, blending and gradation throughout the base.



9. The breakdown of the subbase through the disintegrating effect of moisture is reflected in a localized movement of the materials in the base.



10. As traffic continues to pound the base, cracks develop and the sub-base is weakened further. Sub-base and base course deflections are unequal and the beam effect of the base is unable to carry the load.



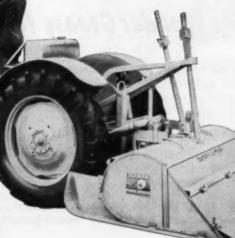
11. Complete breakdown of the base course above the sub-base failure has started a chain reaction as more moisture will permeate the fault and establish repeated breakdown cycles along the width and length of the pavement.

day.



SEAMAN MOJORS

> 280 North 25th Street Milwaukes 3, Wisconsin



SEAMAN TRAV-L-PLANT. Equipped with pump, tachometer, volumetric meter and spray bar for closely controlled application of bituminous binders or water.



For a complete description of the SEAMAN TRAV-L-PLANT and the SEAMAN Self-Propelled Mixer, write for Bulletin TPS. Send a postcard to-



REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

Due to its special adhering qualities, Globe Form Grease requires only a thin coating for utmost effectiveness. In fact, one gallon adequately covers approximately 200 square feet! And in addition — Globe Form is stainless, leaves a whiter smoother surface, and eliminates the need for painting.

Why not write for full particulars today? Once you use Globe Form Grease, you'll understand why engineers and contractors hail it as the "wonder grease" for concrete forms.



Write for descriptive booklet of all Borne, Scrymser products.

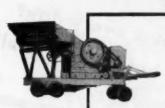


Our Laboratory Facilities are always at your disposal

BORNE, SCRYMSER COMPANY

ELIZABETH, N. J. . CHARLOTTE, N. C.





To the scores of satisfied users of Diamond products, and to future Diamond customers, it is a pleasure to announce that the Diamond Iron

Works line of crushing, screening, washing, and conveying equipment for rock, gravel, aglime, and corporate aggregates has been acquired by Goodman Manufacturing Company, Chicago.

Goodman, 54 years a leading designer and manufacturer of heavy equipment for underground mining and tunnelling, will contribute advantages inherent in a large organization of sound reputation and technical skill.

Manufacturing, as well as Diamond's sales and engineering departments, have been transferred from Minneapolis to the Goodman plant in Chicago. Now that larger and better facilities are available, Diamond users can expect such benefits as improved service—better-than-ever Diamond products.

Experienced engineering and sales counsel will be maintained by Diamond veterans. An established Diamond distributor—there are more than fifty located throughout the country—will continue to serve you. Your call upon any of our services will be promptly cared for.



### DIAMOND IRON WORKS

division GOODMAN MANUFACTURING COMPANY

Halsted Street and 48th Place . Chicago 9, Illinois

# before rou any 600-ft. portable... ask these questions: Is it easy to start? Is it simple to operate? Will it operate from the EQUATOR to the POLE? Does it save fuel and oil? Will it put in 24 hours every day? Will it run 6,000 PLUS hours before overhaul?

Send for Gardner-Denver Bulletin PC-12 before you buy.



All over the Globe... with a

GARDNER-DENVER

the answer is...



**SINCE 1859** 













Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd. 14 Curity Avenue, Toronto 13, Ontario



### "Loads more in 3 buckets than others can do in 4"

"I'll load as much or more in 3 buckets with one of my Drott Skid-Shovels than any unit their size will handle in 4!" says Contractor James Kleager of Omaha, Nebraska.

"They're really a pleasure to operate; and with that bucket tip-back at ground level, I get a heaped load every time!"

We know that contractors like Mr. Kleager are wise buyers. They examine the facts — compare features — and choose the best value.

Drott's many patented and exclusive features make the Skid-Shovel so rugged . . . so versatile . . . so productive,

that owners keep them busy on profitmaking jobs all year around.

That's why Drott's whopping 451% sales increase in a one-year period is convincing proof of superiority on all counts—proof that Drott Skid-Shovels can give you more for your money—and do! Drott Skid-Shovels are designed exclusively for International TD-6, TD-9, TD-14A and TD-18A crawler tractors.

For information—write for catalog 108.

DROTT MANUFACTURING CORPORATION
Milwaukee B, Wisconsin

For a demonstration — contact your Drott-International Distributor TODAY!

JAMES KLEAGER, OMAHA CONTRACTOR, at the controls of one of his Drott Skid-Shovels. Says Mr. Kleager, "This is by far the best loader I've ever operated. Mr. Drott Skid-Shovels do so many things so well that I'm really enthused about their outstanding production performance!"

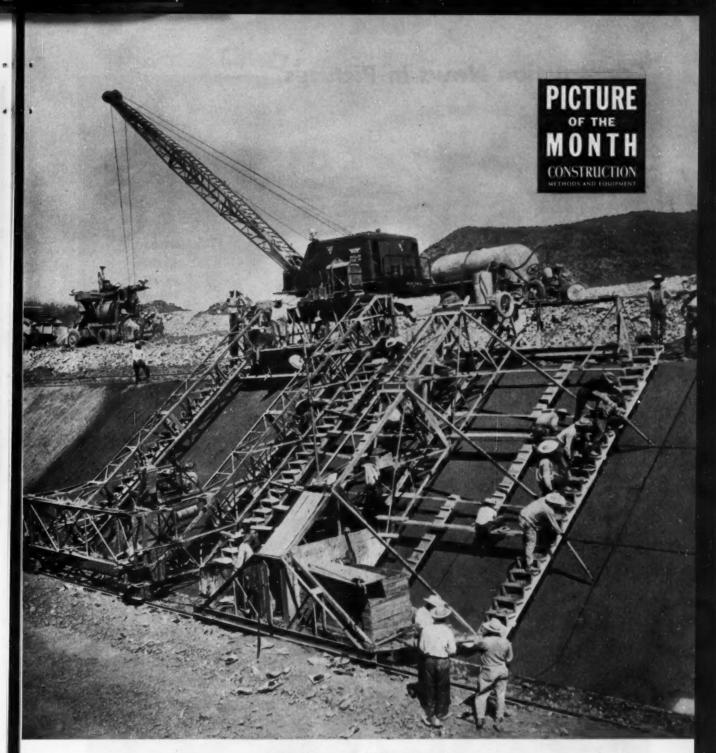
DROTT SKID-SHOVELS are shown below on a rough grading job. Note the clean lines, clear vision, heaped loads and effortless control. Drott Skid-Shovels have a terrific pry-over-shoe Break-Out Action with the bucket, diverting all of the pressure in the ground and not on the tractor. This

digging power is greater than the weight of the tractor. Skid-Shovels also have higher lift and greater reach than any comparable equipment. Equipped with patented Hydro-Spring, an exclusive shock-absorber on Drott equipment, shocks are reduced to less than \$\frac{1}{2}\$ of their original force.





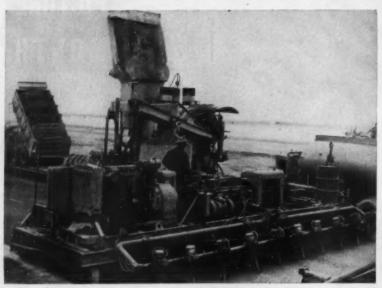
Page 41 — Construction METHODS and Equipment — April 1954



## Lining the Side

Canal lining of concrete is laid down steadily by this efficient setup rolling along smoothly on the huge Yaqui River Valley irrigation project in the state of Sonora, Mexico. The Mexican-built lining jumbo is powered electrically by a Palmer plant driven by an International engine, mounted on the bottom of the machine. A Chevrolet engine at top drives a winch. At upper left, Ford batch truck dumps into skip of Koehring 16-E Twinbatch mixer. The Bucyrus-Erie 38-B crane delivers concrete from mixer to jumbo with a 1-yd Gar Bro bucket built up to hold one cubic meter. Crane makes a complete delivery cycle in 30 sec. Workmen are sealing contraction joints with pressure-placed Techkote mastic. Then Hunt Curacrete is sprayed over entire surface to protect new concrete against hot sun.

### **Construction News in Pictures**



FAST, FULL-DEPTH VIBRATION—Concrete slab, 15 in. thick and 25 ft wide, is laid at the rate of 1,300 cu yd daily during the paving of an aircraft parking area at Davis-Monthan Air Force Base, Arizona. To meet specifications set by Corps of Engineers, contractor installed ten Viber internal vibrators on a frame across the back of the spreader. Caterpillar diesel-electric plant on spreader runs them at 10,000 cycles for fast finishing of harsh concrete through the middle of the slab, as well as along form edges. Paving is joint venture of Morrison-Knudsen Co. and R. A. Westbrook.



ALL-DIRECTION LIGHTING

— Blaze of light goes out in all directions when this big floodlight tower goes into action. This is one of the 50-ft towers on steel skids used at Fort Randall Dam on the Missouri River. Caterpillar diesel-electric set supplies current for the 16 1,000-w lamps.



DEEP IN THE QUARRY—Three long flights of belt conveyors, each powered by its own electric motor at the head pulley, take bank-run material up the steep slope to feed the gravel plant of the R. J. Noble Co., Orange, Calif. Caterpillar DB with 8U bulldozer gathers material in quarry and pushes it into tunnel that supplies the conveyor. Operator periodically takes tractor to higher levels in quarry to push down more stock, then returns and collects it for the conveyor.



AIR-POWERED—Guniting goes on at a steady pace with two guns working on the banks of this flood control ditch along the San Gabriel River Basin in Los Angeles County, Calif. Macco Corp. of Paramount, Calif., the contractor, gets big coverage daily by using two 600-ft compressors—a Chicago Pneumatic and an Ingersoll-Rand, both powered by General Motors Series 71 diesels. Water tank truck and portable mixing equipment in the rear are set up inside gap cut out of bank of earth.



# Jaeger offers new hi-performance 2" pump

Pumps all the water a 2" hose can handle. Operates at easy speeds. Weighs only 190 lbs.

Delivering its full rated capacity of 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm below the speeds of similar ordinary pumps) this Model 2PN actually pumps all the water that can be pulled through a 2" suction line under average operating conditions. 28" vacuum at the intake flange is not unusual.

Put this "Sure Prime" pump on your job and see how conservatively it has been rated, even at heads well above 100 ft. Equally remarkable, this performance is achieved by a pump that weighs only 190 lbs. on big, 13" diameter pneumatic tires, only 160 lbs. on base, and measures only 24"

x 21" x 26" high, including tires.

Doubly-sure fast priming is guaranteed by Jaeger's combination of inherent self-priming and "jet" priming—two independent, simultaneous priming actions. Powerful Wisconsin AKN engine, delivering 5.3 hp at 2500 rpm, is ideally suited to this pump. This easy speed means longer life with high efficiency maintained by Jaeger's self-cleaning shell of 20% steel, long-life Lubri-Seal on pump shaft, reversible liner plate, and an impeller adjustable for wear.

For complete information on this model and other Jaeger pumps up to 10" size, see your Jaeger distributor or send for Catalog P-10.



Only 190 Lbs. on Pneumatics

With capacity and pressure enough for good sized pumping jobs, this Model 2PN is yet light and small enough for a plumber's work. On cushion rubber tires weighs only 180 lbs., on base only 160 lbs.

### THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS . TRACTOR LOADERS . TRUCK MIXERS . CONCRETE MIXERS . PAVING MACHINES



# 4-WHEEL DRIVE SHOVELOADER WORKS WHERE OTHER LOADERS FAIL

### Here's Why:

This big 1½ cubic yard SHOVELOADER is equipped with planetary type axles which positively drive the ground grip tires through mud, muck, loose sand and over rough ground. Five speeds forward and five reverse give you proper gear selections for any job. The SHOVELOADER is swift and easily handled too because it's rubber tired and powerful enough to do jobs formerly requiring crawler mounted loaders. It's the most advanced rubber-tired 4-wheel drive loader sold today. Choice of gas or diesel power, and front, rear or four wheel power steering.

Before you buy any loader, investigate the SHOVE-LOADER. Ask your dealer for a demonstration to prove to you that this tractor-shovel is the best value from any angle.

### More Jobs Can Be Done with These Interchangeable Accessories

Struck measure of the standard bucket is 1½ cubic yards. For tough digging jobs a smaller, rugged 1¼ yard bucket can be had... for handling light material there is a 2½ yard bucket. SHOVELOADERS are great 4 wheel drive snowfighters, too, with either a

Wausau or an Anderson snow plow. They become handy material handling machines with adjustable pallet forks or a crane hook. Leveling, grading and backfilling jobs are done in short order with the backfill blade.

With these accessories this nimble but powerful SHOVELOADER, does many different jobs better, in a shorter time and with maximum dependability.

### Axle Strain Reduced 300 Percent by Planetary Gears in Each of Four Wheels

Not only axle shafts but differentials, ring gears, pinions, transfer case gears and transmission gears are protected against strain and extreme shock loads by 3 to 1 gear reduction in each wheel. This type reduction also

increases clutch life and reduces tire wear. To you this means far less down time from drive line failures, clutch adjustments or replacements and tire changes. Your local dealer can prove it!



### **O** PROTECTS OPERATOR FROM ACCIDENTS

... Moving control arms cannot endanger the operator at any time because they are located ahead of him...not around him. The operator sits in a position which gives him excellent visibility...he can see where he's going... where he's digging. He has more visibility than with other loaders.

#### **A** BETTER BUCKET ACTION

... The 25-inch power downcrowd makes easy work of excavating and stripping jobs. You get a natural digging action with the bucket because it's hydraulically controlled through a jointed lift arm. This arm action allows the bucket to be tilted back as much as 30 degrees at ground level, giving you a full bucket at every bite. In fact, the SHOVELOADER bucket can be filled chock full without raising it more than a few inches off the ground.

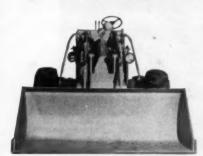
#### **3** ALWAYS CONSTANT TRACTION

••• 23 inches of rear axle oscillation makes sure that all four wheels stay solidly on the ground when moving over and working in very rough ground. Don't overlook this extra plus feature that gives you full traction on all driving wheels at all times.

#### **A** EASY LOADING

... The 10'-10" lift height gets the bucket over side or rear of the highest truck bodies. The long forward reach lets you spot loads in the center of the truck body where they belong. The bucket dumps clean too because it has a steep dump angle. Gumbo can be shaken free by slamming the bucket hard and fast against its stops by means of the double acting hydraulic control cylinders.

#### 6 FULL BUCKET WIDTH



dig the tractor will follow without climbing. The bucket clears
a full width path for the wheels,
especially useful when excavating and stripping. Its cutting edge
gets right next to curbs and walls
too, making clean-up jobs easy.

0

Standard 1½ yard bucket is interchangeable with 1¼ yard size for heavy work, 2½ yard size for coal handling or snow removal, material handling forks, lifting crane, backfill blade, bulldozer blade or snow plow.

We've told you only part of the story. When buying a front end loader you'll be money ahead by seeing your Baker-Lull distributor and having him demonstrate the SHOVELOADER for you. He's also equipped to give you the best in service when you need it.

For complete description and specifications on the SHOVELOADER, send in the coupon below, or ask your Baker-Lull distributor for Bulletin AD-55.

### THE BAKER-LULL CORPORATION

355 West 90th Street • Minneapolis, Minn.

A Subsidiary of The Baker-Raulang Company









THE BAKER-LULL CORPORATION,

355 West 90th Street . Minneapolis 20, Minn.

Please send 8-page illustrated specification bulletin AD-55 on your 4-Wheel Drive SHOVELOADER

NAME.....

COMPANY.....

ADDRESS......STATE.....

### **CONSTRUCTION 'ROUND THE WORLD**



WHERE THEY MET—Early last month delegates to the 10th Pan American Conference of all North and South American nations met in the new "Aula Magna" conference building at Caracas, Venezuela. This is a photo of the concrete structure under construction last fall. Paralleling much construction of large structures, in Europe, the contractor here uses a towaring long-boom crane

to service a large construction area. The more mobile Manitowoc Speedcrane at left assists where the tower crane can't reach. Venezuela built the structure, seating 3,500, in the heart of its University City. It has a huge stage, and is equipped to serve both local and international conferences. The building is only one of many improvements under way in Caracas.—Hamilton Wright photo



POLING THE PIPE—Pipeliners must be prepared for anything. These two are floating 30-ft lengths of oil line pipe strapped to pontoons, into positions for connection to pipe placed earlier. Pipe lengths were joined into 1,200-ft sections, then lowered to the bottom of the cove. Scene is the crossing of Hamilton Bay in Canada by Imperial's 188-mi line laid from its Sarnia refinery to Toronto.—Eastern Publishers photo



WHERE'S THE TRAFFIC COP?—How to keep perspiring coolies by the score and seven crawler tractors with sheepsfoot rollers from getting tangled on the fill must be a sizable problem for the management on this job. It is the site of the dam of Kuanting Reservoir, rated by the Communists as one of the biggest in China. Note the incongruity of hand-carried baskets of dirt going on the fill for modern machine compaction.—Eastfoto

# Consider net hp--Consider live wt!



The design of a K-360's crawlers is another important feature. Perfect guiding, selfcleaning, smooth traveling crawler tracks . . . improve operation and minimize wear.

# Figure a job with a Speed-o-Matic controlled K-360 ... and your bid will be a tough one to beat!

LIKE all Link-Belt Speeders, a 1½-yd. K-360's 142 net hp gives you more digging power...more lifting power than any rig in its class. This quality-built rig has the stamina (see box) to handle the extra net hp week after week...month after month...without undue wear.

Consider these facts along with the 25% greater output you get with Speed-o-Matic controls, the *true power hydraulic system:* (1) Faster, easier, more accurate operation, (2) minimized operator fatigue or end-of-the-shift letdown, and (3) exceptionally low maintenance and service costs.

These are a few of the reasons why a K-360 helps you get more jobs without shaving profit. Get the complete story. Ask your distributor or write for catalog 2259.

LINK-BELT SPEEDER CORPORATION

Codar Rapids, lows

13,42



COMPARE 1½-yd. shovel-cranes with and without counterweight. That test spotlights the size, weight and heft built into the working parts and structure. You'll find the K-360 has greater "live weight."

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

# LINKBELT SPEEDER

# Big yellow units teamed up on Trans-Canada Highway relocation job

Blind curves, roller-coaster hills, frost boils and breaks once made travel hazardous and unpleasant for motorists on No. 17, between Nairn and Whitefish, Ontario. Today, drivers find its ninemile relocation safe and easy going. Part of Ontario's 1400-mile contribution to the Trans-Canada Highway scheme, the new stretch involved 670,000 cu. yds. of excavation, as follows: 270,000 of earth, 200,000 of rock and 200,000 of "granular material" fill. Contractors on the project: Ellins Construction Ltd., Foronto, who relied heavily on Caterpillar\* equipment to push the job through on schedule.

Prime machine in moving gravel fill for the finished grade was the Cat\* DW10 Tractor with No. 15 Scraper. On a one-mile round-trip haul, this unit made four trips an hour with 19- to 20-ton loads. Average production daily: 1000 tons. On shorter hauls, the unit chalked up 1500 to 2000 tons production daily. The rig was push-loaded by a D8. Commenting on performance, Master Mechanic G. Vaughan said: "The gravel in the pit was extremely loose. The DW10s were about the only



The blade stays where it's put—one of many advantages of the sturdy No. 112. More than 99% of Caterpillar Motor Graders ever built are still working.



Big tires float the Cat DW10 Tractor No. 15 Scraper unit over loose stuff as it's push-loaded by a Ds on a nine-mile relocation of highway between Nairn and Whitefish, Ontario.

machines that would go through it. They have good loading characteristics—and the ejection on the No. 15s is clean and fast. Good maintenance, too."

Of the Caterpillar No. 112 Motor Grader handling gravel dumped by the DW10s, he had this to say: "I like its power, weight and traction — they're balanced for good production. It takes more punishment with less repair than any other make." And a No. 12 with a bulldozer attachment won this praise: "It's strongly built — it stands up under a beating. Visibility is good and mechanical controls stay put."

In addition to these tough yellow units, Ellins Construction used a D7, a D4, also a D13000 Engine in a Gardner-Denver compressor. Standardization like this pays off on any job, routine or rough, with more work at lower cost and less down time. Operators and mechanics get to know one make well. As a result, operators push through more production with less



This Gardner-Denver compressor is powered by a Cat D13000 Engine. Honestly rated, sturdy yellow engines deliver all the power they promise in the spec sheets.

effort, and fuel, too. All Caterpillarbuilt units burn low-cost No. 2 furnace oil without fouling. And prompt, onestop service from one dealer, your Caterpillar Dealer, is another factor in keeping costs down and production up.

He is the man to see for complete facts on the advantages of standardization. He'll be glad to demonstrate Caterpillar equipment at your convenience on your job. Call him today.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

(Advertisement)

HAROLD W. RICHARDSON, Editor

### Do You Really Know Your Costs?

OVERHEARD at the recent AGC convention in Los Angeles: "I bid my bare field costs without equipment charges and still came out fourth." Nuts! We'll bet that guy doesn't really know his costs. And probably the fellows who underbid him weren't too sure of their costs, either. There's a lot of crazy bidding going on today that has very little relation to actual costs—and no resemblance whatsoever to sound contracting procedure.

It is ever thus in the contracting business. Whenever competition gets a little tough, when jobs become somewhat scarce, when a few of the boys get a little hungry—then panic and pandemonium replace judgment and common sense in bidding, and of course somebody always gets hurt. But it's not the contractors who pursue sound cost-keeping methods, and thus know their costs, who get burned. No, construction firms who are keenly cost-conscious are also most apt to be cautious and conservative in bidding. They are not the kind of outfit who takes work just for the experience, or to keep their equipment busy at a financial loss.

It's the contractor who doesn't know costs who is doing most of the plunging and wild bidding today. He's been spoiled by several years of construction prosperity, during which he would have had to combine sheer stupidity with all the unkind Acts of God and the Devil to lose money on a job. He not only has never become cost-conditioned, but also in all probability he has never become proficient at job management, so he's in double trouble now.

In times like these a thorough knowledge of costs is more important than ever to the contractor. Such knowledge will keep him from bidding foolishly and recklessly. But, even of greater importance to his business welfare and to his chances of survival, is the ability cost-consciousness gives him to appraise the bidding situation and to evaluate his own operating efficiency. For only when a contractor is fully cognizant of his strength and weaknesses, as revealed by complete study and appreciation of his costs, can he hope to cope with his jittery competitors.

And there are all too many jitters in the contracting world today—unwarranted by any sound, sensible approach as to what's happening in construction. By the beard of the Prophet, declarations of the economists and all other indications, construction in 1954 will come mighty close to the record volume of last year, surpassing that of 1952, greatest of all up to that time. But for several reasons, contract awards have got off to a slow start this spring, and still lag about a third below those of corresponding 1953. Yet each week shows a steady increase in relation to last year, and highway awards are already up to the '53 rate. So there's going to be lots of construction work this year.

Then why all the jitters? Because some contractors can't wait. Panic and despair replace sound judgment and reason. They scramble for the jobs that are being let and bid without reason or sense. They lower the going price of new construction, of course, and they probably will lower themselves right through the floor into oblivion.

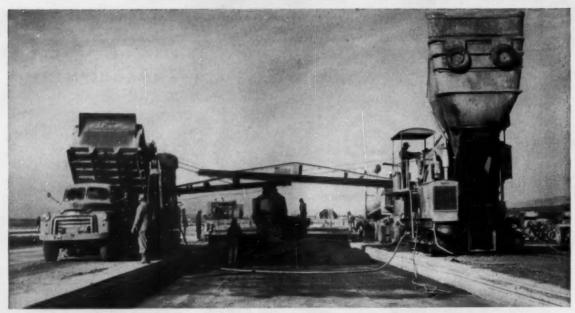
There's nothing wrong with lower construction prices today—if they are based on a determination and understanding toward better job management and greater operating efficiency. In fact, lower construction costs are in keeping with the present economic climate of the country.

So, the contractor who is cost conscious, maintains a complete cost-keeping system, and then applies the knowledge therefrom in a sensible approach to, and conduct of, today's construction procedure, has nothing to fear. Guesses might get you by in the boom times, but when the chips are down, only cost figures and their judicious use will make for business survival.

Do you really know your costs? If you don't you're a likely candidate for becoming a statistic in Dun and Bradstreet's list of business failures.

Rich

## Air Force Base Gets Thick Pavement



TWO 34E PAVERS, a Koehring at left and Multi-Foote on right, produce concrete for a 19-in, thick pavement for a warm-up apron for

Edwards Air Force Base in California's Mojave Desert. No reinforcing is used. Note well-trimmed subgrade.

Photos by CM&E and Corps of Engineers



FLEET OF BATCH TRUCKS carrying five batches each keeps pavers producing to capacity. Subcontractor hauls batches with big GMC dumpers. Job keeps about 15 trucks on the go.



BIG TANK TRUCK supplies water to both pavers simultaneously. Water also is furnished for paving by a subcontractor. Contractor has set up equipment to place 2,000 yd daily.

A REAL PAVING JOB is what three California contractors got last year when they became the successful bidder on the runway and taxiway system now under construction at Edwards Air Force Base in California's Mojaye Desert.

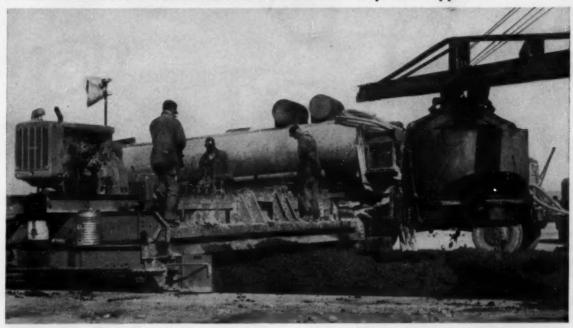
The joint venture of R. A. Westbrook (sponsor); Morrison-Knudsen Co., Inc.; and Ford J. Twaits Co. was low bidder on the \$6½ million job. Concreting got started in the waning days of 1953 and will continue through all of 1954.

The work includes more than 400,000 yd of 19- and 17-in. pavement. Taxiways are 100 ft wide and the runway is 300 ft wide, as are parking and warm-up aprons.

The contractor has set his sights on a 2,000 yd a day output, and the batch plant is built accordingly. Reason for this limitation is that cement will be available for only that much production during the summer months when it is in short supply in the Southern California area. Cement supply is limited, even though three different cement producers are supplying the job.

Many subcontractors are working on the job. Almost everything except the actual paving work is subcontracted. But 74% of the contract value is in the pavement, so the bulk of the job remains in the

# Two pavers work parallel, put down 2,000 yd of concrete daily... ... subcontractors' batch trucks and water tankers keep them supplied



LOW-SLUMP CONCRETE IS SPREAD with a Blaw-Knox spreader rolling on the form rails or on pavement placed previously. Taxiways

are 100 ft wide; runway, parking and warmup aprons are 300 ft wide. Project will require a total of 400,000 yd of concrete.

prime contractor's hands directly.

Included among the subcontractors is a joint venture of Westbrook and Morrison-Knudsen to supply aggregate (Twaits didn't want in on this as the aggregate plant is intended to be a permanent thing for other work in the area). The aggregate plant is a Diamond Iron Works product and is keyed to producing 400 tons per hr.

Also subcontracting is H. Earl Parker, Inc., of Marysville, Calif., who is doing the 1,400,000 cu yd of excavation and bringing in the 450,000 cu yd of borrow necessary to grade the runway. Batch haul is subcontracted to Miles & Son, truckers of Merced. Water haul is subcontracted to LeFever Trucking Co. of Sacramento.

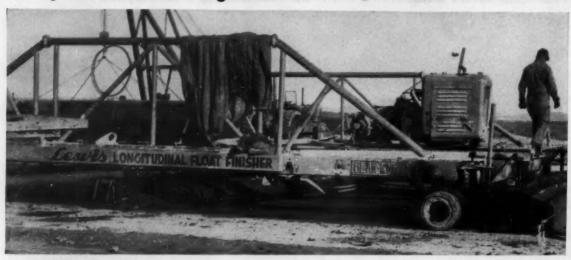
Concrete curing, as well as sawing and sealing the dummy contraction joints, is subcontracted to Hunt Process Co. of Los Angeles. Other contractors are involved on electrical duct work, building removal work and other items not directly concerned with the concrete paving.

Most of the equipment used in the paving work is shown in the accompanying photos. All of it is arranged for best efficiency—except perhaps for the finishing machines. The contractor attempted



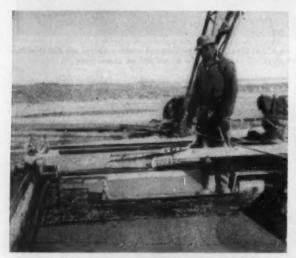
SIX VIBER VIBRATORS on the rear of the spreader, powered by a Caterpillar diesel motorgenerator set, work air pockets out of concrete. Workman walks easily across stiff mix.

## Husky Machines Do Big Job: Extra-long unit leaves smoother surface . . .



FIRST FINISHING OPERATION is by a Lewis "longitudinal float" finisher, a machine 30 ft long that incorporates two Blaw-Knox

vibrating screeds-one at front and one in middle. Long wheelbase of machine is intended to leave smooth surface.



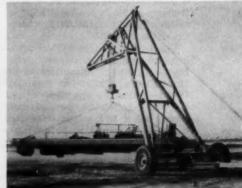
FINAL POWERED FINISHING is by Koehring longitudinal float that vibrates parallel to the center line of the slab—moves concrete transversely to attain specified slope.



HAND FINISHING remains in vogue. It is necessary at Edwards at odd sections where mechanical equipment cannot be fitted in without a lot of work. Heltzel steel forms are pin-anchored.

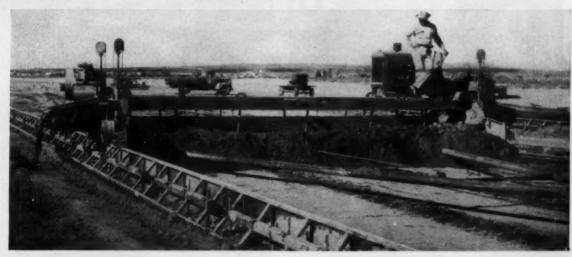


CONCRETE SAWS on self-propelled rig cut contraction joints. Made by Cutcrete Corp., of Los Angeles, machine has 16 rotary blades powered by four 31-hp Wisconsin engines.



HOISTING RIG, a welded steel frame on two rubber-tired wheels, moves paving

### ... Multi-unit saw cuts contraction joints; rubber-mounted hoist moves equipment



FINAL CUT on pavement subgrade is made by Lewis subgrader that removes about I in. of material in a pass. Grader rolls along

on steel forms, is pulled by a tractor. Conveyor belt deposits spoil on either side, is powered by a Waukesha engine.

to get a satisfactory finish from a 30-ft long unit that includes two Blaw-Knox floats. The long wheel base was aimed at eliminating variations in the completed surface. However, the Corps of Engineers specifications called for mechanical longitudinal finishing. So a Koehring unit meeting this specification was added to the equipment train. Functions of the two machines overlap somewhat. But neither will do a satisfactory job alone.

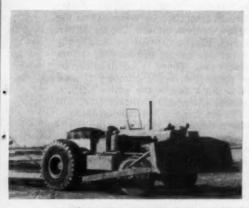
Design and construction of the runway work is handled by the Los Angeles District, Corps of Engineers, Col. Arthur H. Drye, Jr., district engineer. George P. Davis is project engineer for the Corps and W. W. Zimmerman is assistant project engineer on the runway work.

Liaison between Air Force and Corps of Engineers is conducted by the staff of Col. S. M. Lutz, Jr., Air Force Installations Representative, South Pacific Division.

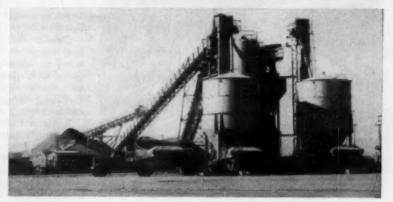
The contracting organization is headed by sponsoring partner Ross Westbrook. D. Gerald Bing is project manager and W. R. Southworth is concrete superintendent.



RUBBER-MOUNTED CRANE is husky, convenient unit easily moved in close as in this case where the heavy Lewis subgrader is picked up after finishing a subgrade. Note smooth grade.



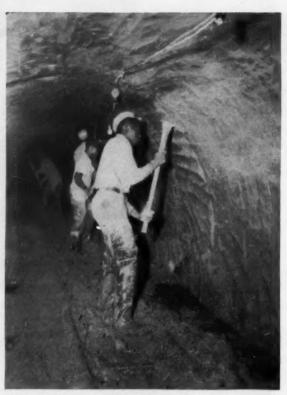
equipment as necessary. It is towed and powered by Caterpillar DW 20 tractor.



BATCH PLANT will turn out 2,000 yd in a 10-hr day. It is a Noble unit with two cement storage silos. Aggregates are fed by conveyors from large stock piles in the rear.

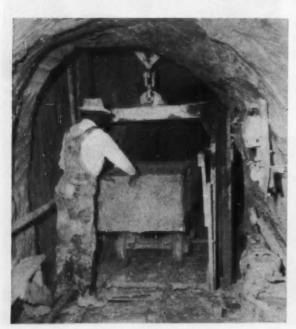


HORSE-SHOE SHAPED TUNNEL, 2.4 mi long, is roughed out of mark with pneumatic spades. Air lines are strung along wall, Water in trench is condensate as there is no seepage.



FINAL SHAPING OF TUNNEL is done by men with adzes, the whole crew taking part in this operation. Marl is easy to work, becomes hard when exposed to the air.

# A 50-mgd Water Supply at Low Cost



MINE CAR loaded with spoil is placed on hoist elevator to be lifted to surface for dumping in spoil area.

KEEPING COSTS TO A MINIMUM is the object of the Commissioners of Public Works of Charleston, S. C., in building a 2.4-mi 7-ft bore tunnel to add 50 mgd to this rapidly growing city's water supply.

The new tunnel, named for Francis B. McDowell, manager and engineer, is of modified horse-shoe section design and extends from an intake and shaft on Foster Creek to an outlet shaft and chamber on the east shore of the Goose Creek impounding reservoir 1.8 mi above the Hanahan pumping station. Foster Creek is a tidal stream freshened by waters from the Santee-Cooper hydro project on the Cooper River.

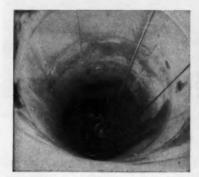
Considerable saving has been made by employing only one assembly of equipment and moving it forward as work progresses. There is no deadline on completion of the project, so every economy is used to keep down costs. As a result, the entire project, including equipment at intake and discharge ends, will cost something under the original \$600,000 estimate.

A minimum crew is employed in sinking the shafts and driving the tunnel. The tunnel crew consists of 2 spaders, 2 gunners, 1 mine car pusher for each 500 ft, a cage signalman at bottom and one at top, 3 dump men, a hoist operator and utility man. All hands work on the final shaping of the tunnel with adzes.

Between the inlet and outlet shafts are two intermediate shafts used to allow driving the tunnel in either direction and to shorten hauls of spoil. When



OPEN CAISSON METHOD of shaft sinking calls for removal of inside steel and outside wood forms preparatory to digging the next section.



EXCAVATED MATERIAL, hand dug without difficulty, is removed from shaft by bucket. Form at bottom maintains alignment.



EXPERIENCED TUNNEL MAN F. B. Mc-Dowell, Jr. (right), engineer for Commission, discusses work with Supt. M. M. Moorer.



SECTIONS of inside steel form are removed by hoist and set aside for use on next pour. Forms are pulled in 3 days,

the tunnel is completed, they will provide water sources for industries along the route.

The marl through which the tunnel is being driven is a limestone formation, principally calcium carbonate, is easy to work with a sharp tool and becomes very hard when exposed to the air. Hence, there will be practically no erosion since the water velocity will be but 2 ft per sec in the tunnel.

Location for the tunnel was made by auger-drilling 2-in. holes from 8 to 60 ft from the surface to the marl. Next, 5-in. test holes cased from the surface to 5 ft into the marl, were drilled to the tentatively fixed elevation of the horizontal center line of the tunnel. These holes, spaced about 200 to 300 ft from the shafts and from the summit in the tunnel at the midpoint between the shafts, served to check alignment and grade, and incidentally as ventilators, providing the only fresh air supply in the tunnel other than that from compressed air-driven tools. But the air in the tunnel is good.

Several features of the shaft construction are of special interest. Shafts, 8 ft I.D. with 12-in. thick concrete walls, were sunk by the open caisson method through the overburden, which varied from 17 to 28 ft, until the top of the marl was reached. Pours were in 5-ft lifts using 5 yd of concrete with 10 lb of calcium chloride added to each yard. After each pour, necessary excavation was done and the prefabricated forms pulled in about 3 days.

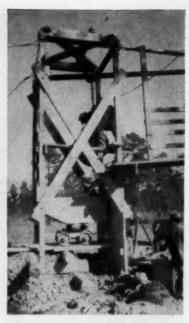
The 12-in. thick walls were designed not so much for strength as to provide added weight to force the caisson to lower levels as hand excavation progressed. Spoil material was removed by hoist bucket, dumped



DUMPING LOADED MINE CARS in spoil area after trip from tunnel to surface via shaft hoist.



HOIST ARRANGEMENT at shaft where tunneling operations are in progress. Frame can be dismantled and moved to next shaft as the job progresses, thereby keeping down costs.



SPOIL MATERIAL from shaft is dumped from bucket into steel carts for disposal.

into small steel rail cars and pushed to the spoil area.

Design of the first 5-ft lift called for installation of a system of radial pipes in the concrete with the inside end terminating in a coupling flush with the inside of the form. The four-pipe system in this section allows for water or air to be pumped into the pipe to break the seal should the shaft get out of line or should excessive skin friction prevent the section from settling into position. When the top of the marl is reached, these holes then serve to grout to shut off any ground seepage.

#### Shoulder Supports Shaft Cylinder

Another interesting feature of the shaft was the design of a circular shoulder to support the concrete cylinder. An under cut was made 5 ft below the top of the marl and the concrete shell extends 30 in. below the bottom of the supporting shoulder to prevent shearing of the marl. This shoulder also serves as a cutoff of the ground water.

On Shaft No. 2 it was necessary to go through 37 ft of soft overburden before reaching the marl, with the shaft going down 84 ft to the crown of the tunnel. Shafts extend from about 1 ft above the ground surface to 5 ft below the top of the marl and bottomed 18 in. below the invert of the tunnel.

No difficulty has been encountered in driving the tunnel headings. First operation is to drive five horizontal 1½-in. drill holes, using high-speed rotating air drills, each 5 ft deep in the heading. Each hole is charged with ½-lb stick of DuPont 40% Gelex dynamite.

Three holes were placed 2 ft below the top, and the other two in the lower quarter and spaced 2 ft from each side. This arrangement was to shoot to the center, fairly crack the mass and move it forward about 6 in. Timing was the top hole set regular, the two in the lower quarter at 25 millisecond delay, in the other quarters at 50 millisecond delay.

After shooting, the muck is removed with small air

spades and hand-loaded by mucking shovels into 21-cu ft Koppel Indiana Car & Equipment Co. mine cars. The cars are pushed on rails to the shaft, hoisted to the top, transported to the spoil area and dumped.

Two compressors, delivering 105 cfm at 90 psi, supply pneumatic tools in the tunnel. Air is conducted through 2-in. black iron pipe supported on the sides of the tunnel with ¾-in. iron U-shaped supports driven into the tunnel wall 2½ ft above the base of the rail.

Pneumatic spades are used to rough out the tunnel which is then finished by hand, using adzes. Progress is about 80 lin ft per heading each week, working a 10-hr day in a 5-day week.

An outlet chamber at the discharge end is to be constructed at the shaft. Two smaller shafts will run at right angles with the longitudinal axis of the tunnel. The invert of the laterals will be 16 ft above the invert of the main tunnel and the distance between the centers of the small shafts will be 20 ft each side, on 40-ft centers.

Design and general supervision of the tunnel construction is by Mr. McDowell, who has been associated with the water department since 1907. C. B. Hallock is resident engineer and superintendent. D. M. Morris is tunnel foreman.

#### **Beware Old Valves**

SODIUM COOLED ENGINE VALVES can be a hazard when they have outlived their usefulness and are to be discarded, unless they are disposed of carefully. The stems are filled with sodium that ignites on contact with moisture and burns at a high temperature. So never cut into such a valve or try to make it into a punch or other tool. When the valve is unserviceable, bury at least 30 in. deep in a remote spot or throw it into deep water. Above all, keep it out of the scrap pile.



HUGE DIVERSION TUNNEL is started with power shovel excavating directly at the face and loading into highway truck. It will divert river on site of Adaminaby Dam, key structure in scheme.



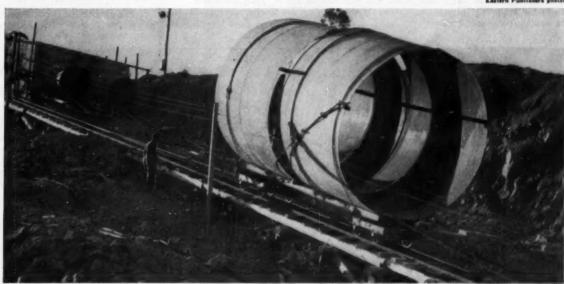
SUPPLIES COME ACROSS the raging torrent of the boulder-strewn Tumut River lashed to a snow sled towed by a sure-footed international TD-24 crawler with dozer raised high.

# HYDROELECTRIC POWER and plenty of water for irrigation are steadily in the making in southeastern Australia where mountain water will be impounded and channeled from the great Snowy Mountains. The official plan calls for impounding of the Snowy River and its tributary, the Eucumbene, and diversion of their waters through long tunnels into the western rivers.

By mid-1954, first power, 60,000 kw, is expected from a huge long-range development that eventually is expected to support a population increase of 2,000,-000 persons. The Australians are doing a good job and have been given freely of U. S. know-how by the Bureau of Reclamation.

# Australia to Get Power From Mountains

Eastern Publishers photos



STEEL PENSTOCK LINERS are hauled up a steep grade on the Snowy Mountains Hydro Electric Authority's project. First power

will come from here. It is rough terrain and Norwegian contractor, F. Selmer, has had to work in rough winter conditions.

### These Men Were Elected to Responsible





NEW PRESIDENT of the AGC is John MacLeod (left), head of Macco Corp., Paramount, Calif., international heavy construction firm. He has served as vice-president of the association, and also as chairman of its heavy and railroad division. Serving with MacLeod as AGC vice-president for the coming year is George Koss, president of Koss Construction Co., Des Moines, Iowa, leading Midwest concrete paving contractor.



HEADING UP the heavy and railroad division of AGC are Jim Henderson (left), president of United Construction Co., Winona, Minn., new vice-chairman, and A. Stuart Macdonald (center) of Strong & Macdonald, Inc., Tacoma, Wash. At right is Jim Sprouse, manager of the division, Washington AGC staff.

SMARTING FROM RECENT bouts with tough competition and low bid prices, some 1,800 delegates to the 35th annual convention of the Associated General Contractors of America at Los Angeles March 1-4 listened to big-name speakers breathe optimism and confidence for future construction operations. Secretary of Labor James P. Mitchell (by sound film), U. S. Steel president Clifford F. Hood, AFL Building Trades president Richard J. Gray, and the association's own managing director Doc Foreman, all agreed that construction activity in 1954 would be close to, and perhaps even exceed, that of 1953.

In reaffirming its traditional stand against day labor construction, the association lashed out at TVA, requesting Congress to withhold appropriations to that agency if its construction is to be done by force account. In labor matters, the AGC seeks to avoid "further unwarranted increase in wage rates" and adoption of welfare plans "not suitable to the industry." The Secretary of Labor was asked to maintain the historic differentials between building and heavy-highway construction in determining minimum wage rates.

A vigorous protest was made to FCC regarding proposed cancellations of permits for contractors' use of 2-way radio telephones.

The 1955 convention will be held the first week in March at New Orleans, La. New officers for the coming year are pictured on these two pages.



FLANKED BY WASHINGTON staff members are new and old leaders of the AGC Highway Division. P. M. (Pat) Thornton (second from left), Thornton Construction Co., Hancock, Mich., is retiring chairman of the division. Next is M. Clare Miller, San Ore Con-

struction Co., McPherson, Kan., who takes over as new chairman. He will be assisted by J. L. Ewell, Ewell Engineering and Contracting Co., Lakeland, Fla., new vice chairman. At left and right are Archie Carter, manager of the division, and Dan Donovan, assistant.

### Positions in AGC at Los Angeles Meeting



DESTINY OF AGC BUILDING DIVISION is in these hands for the coming year: Welton Snow, manager of the division for the Washington staff; Frank Rooney, Frank J. Rooney, Inc., Miami, Fla., new

chairman; Frank Burrows, Williams & Burrows, Inc., San Francisco, retiring chairman; Jas. W. Cawdrey, Cawdrey & Vemo, Seattle, new vice-chairman, and Jack Bowersox, assistant division manager.



NEW AND OLD OFFICERS of the hard-working AGC Secretaries and Managers Council are, left to right: Curtis Bell, Smith Texas Chapter, Corpus Christi, re-elected secretary; Robert Patton, Carolinas Branch, Charlotte, N. C., retiring chairman; A. H. (Bill) Har-

ding, Portland, Ore., Chapter, new chairman; Wm. C. Bowden, Master Builders Association of Allegheny County, Pittsburgh, vice-chairman for Building Division; and Don Shaw, Southern California Chapter, Los Angeles, vice-chairman for Heavy and Highway.

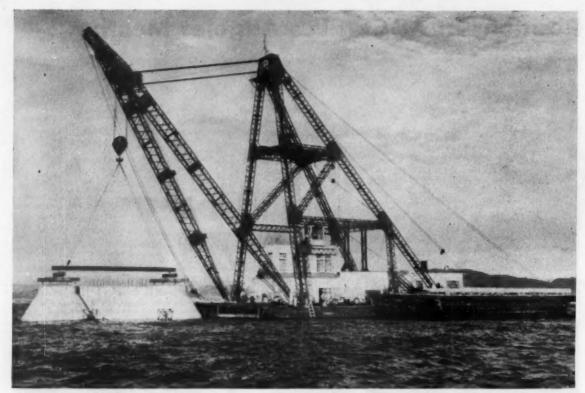
### Fort Randall Dam Starts Generating Power

AT A SIGNAL from President Eisenhower in Washington, South Dakota's Governor Sigurd Anderson threw a switch at Fort Randall Dam on the Missouri River in his home state to start the first of eight 40,000-kw generators spinning on March 15. The dam, 10,000 ft long and 160 ft high, required 50,000,000 cuyd of earth and chalk fill and nearly a million yards of concrete.

Principal construction contracts were held by Johnson-Winston Co., Western Contracting Corp., McCarthy Improvement Co., Silas Mason Co., and Donavan-Lavering-Bayle. The project, just about completed, was built by the U. S. Corps of Engineers, Omaha District, under several district engineers. George Evans, area engineer, was in charge of all construction at the site, including railroad and highway relocations.



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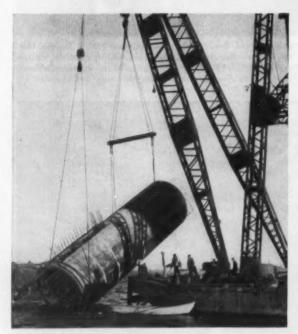


DOUBLE-CONE SHELL, connected by a hollow concrete diaphragm is eased into water on way down to previously set bottom shells. Big

150-ton derrick was rescued by contractors from a junk yard; is steam-powered, has six hoisting engines.

# **Precast Shells Become Bridge Piers\***

By L. L. WISE, Associate Editor



HEAVY CONCRETE SHAFT, designed to fit on top of cone shell, is slowly tipped to vertical position by the big derrick. Diver will remove bottom sling after shaft hangs vertically.

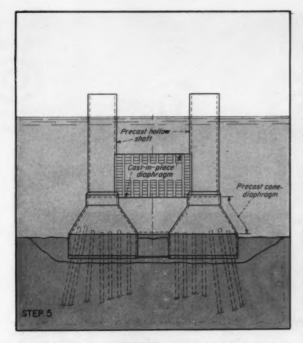
HEAVIEST LIFTING during construction of the deepwater piers for the Richmond-San Rafael Bridge across the north arm of San Francisco Bay comes during the placing of each pair of Siamesed precast shells. These units are twin truncated cones, connected by a concrete diaphragm shell.

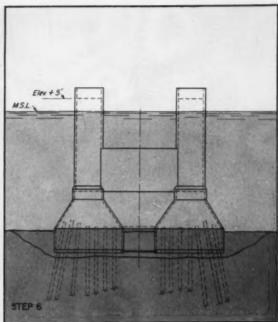
Lifts vary up to 105 tons. The cone units fit over reinforcing steel extending up from the previously set bottom shells that, when the tremie concrete core of the pier is placed, provides positive bond between bottom section and cone.

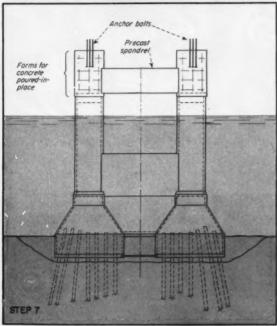
Fifty-three of the deep-water piers are "2-belled" piers and nine are "4-belled" piers. From the cone section on up, the 4-belled piers are formed with steel shells. These shells are light enough to be handled by the contractors' derrick barge whereas concrete 4-belled shells would be prohibitively heavy. These 4-belled piers are required for the main towers on the cantilever portion of the bridge and for anchor piers.

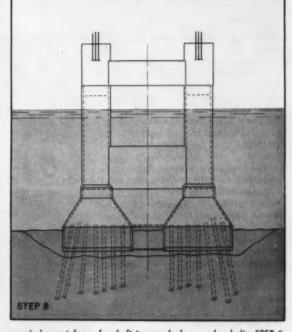
Next come concrete shafts weighing up to 101 tons each that take the pier structure above water line.

<sup>\*</sup>A description of the placing of bay-bottom foundations for these piers begins on page 62 of the March issue of "Construction Methods and Equipment."









ASSEMBLY SEQUENCE—STEP 5: Set precast cone-diaphragm unit; set precast hollow shafts and place forms for cast-in-place diaphragm. STEP 6: Pour tremie concrete to El +5 ft. STEP 7: Place precast

spandrel; erect forms for shaft tops and place anchor bolts. STEP 8: Pour concrete to final elevation; strip forms and cure, completing the pier structure.

These shafts are positioned by means of tubular steel towers attached to the bottom shell. A turnbuckle arrangement holds them in place until tremie concrete can be poured.

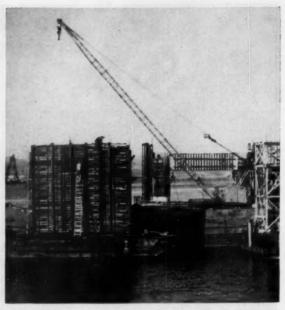
The two shafts in each 2-bell pier are connected by a belowwater diaphragm. It is a continuation of the integral diaphragm between the cone units. Forms for the diaphragm between shafts are metal. They are completely assembled in the dry, including the reinforcing steel. Later removal permits re-use. This part of the diaphragm forms is for the 2-bell units, the only steel forms used for

the tremie pours of this type pier.

When all these elements are in place, the entire pier assembly is filled with tremie concrete up to El +5. These pours range in quantity up to 1,000 cu yd. They are serviced by a floating concrete plant. The plant, in turn, is supplied by aggregate barges and a



SPREADER BAR holds hollow shaft perfectly vertical for fitting to cone below which supports tubular steel towers. Turnbuckles hold shafts steady till tremie concrete is poured.



STEEL FORMS for under-water casting of concrete diaphragm between shafts are assembled above water, including reinforcing steel. Crane is a Koehring unit mounted aboard a surplus LSM.

converted LSM carrying bulk cement.

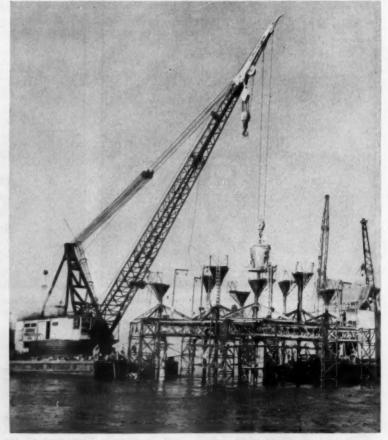
Next step is to place precast concrete spandrel beams on top of and between the shaft units. Then the pier top up to El + 13 is formed and anchor bolts set. When this final concrete is poured, the deep-water piers are finished except for form stripping and removal of the steel towers.

The substructure contractor is required to deliver piers for steel erection in accordance with a tight time schedule. Each of the 62 deepwater piers. has an individual completion date—all to be completed by mid-1955. So far the work is on schedule. Completion of the bridge, including steel superstructure and approaches under separate contracts, is expected by October, 1956.

#### **Project Personnel**

The project is designed and construction is being supervised by the Division of S. F. Bay Toll Crossings, California State Department of Public Works. Norman C. Raab is project engineer. Ben Balala is resident engineer.

The Gerwick-Kiewit joint venture is under the general direction of Ben C. Gerwick, Jr., vice-president of Ben C. Gerwick, Inc. Don Weaver is project manager, Wm. Talbot is project engineer and John Ford is project superintendent.

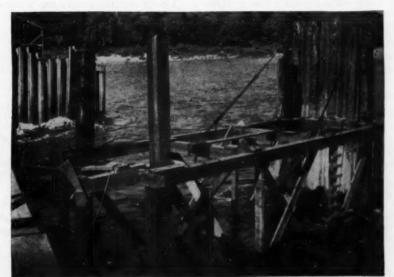


TREMIE CONCRETE is discharged into one of several pipes for shafts and diaphragm below the surface by bucket swung from floating crane. Tremie hoppers are raised by air tuggers, 10-ft pipe sections removed at top. Concrete plant is aboard barge in background.



Cranes and dinkey roll on temporary bridge around curve to...

# **Build Piers for Railroad Bridge**



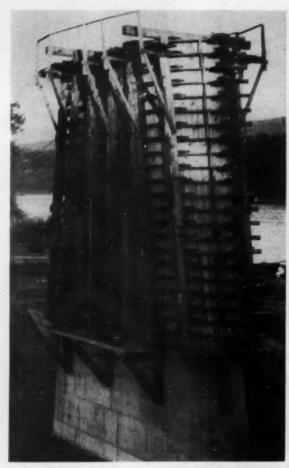
TIMBER BRACING SETS of 12x12's framed together were templets for sheet-pile driving in river. They were held in position at the pier site by four bearing-pile spuds.

By JOSEPH GOFF Engineer, Contracting Div., Dravo Corporation

NINE PIERS were the major items of construction of an 800-ft, 10-span curved railroad bridge built across the Delaware River some 10 mi above Easton, Pa., by the Dravo Corporation of Pittsburgh.

In addition to the nine reinforced concrete piers, there were two abutments to complete the substructure. The bridge carries a spur track to provide rail service to the new Pennsylvania Power & Light Co. power station on the Pennsylvania side of the river.

From the New Jersey bank, deep plate girders make four spans on five river piers which are spaced at 100-ft centers on a 9½-deg curve. Shorter plate girder spans are carried across the abandoned Delaware River Canal and the low



PIER FORMS were built in units for ease in assembly and stripping. Wedges between girts where they were framed together at the nose permitted opening of about 6 in. to lift form over top.



MIXPLANT had 2-yd Smith mixer filling 2-yd buckets on flat car below. Dinkey pulled car to pier sites, and cranes handled buckets. Aggregate bins were filled by clamshell.

ground on the Pennsylvania side of the river by four piers spaced from 53 to 63 ft.

All construction was carried on from the Pennsylvania side, using land equipment. A temporary trestle bridge contructed 34 ft down river, paralleling the railroad bridge, gave access to pier sites. A 3-ft 6-in.-gage dinkey track was cantilevered from the down-river side of the temporary bridge. All concrete, reinforcing, sheet pile and other construction materials were hauled to the pier site over this track.

The five river piers and the two land piers nearest the river were constructed inside single-wall, internally braced sheet-pile cofferdams, and were founded on rock. Four-ft-thick foundations founded on gravel strata were formed in open excavations for the Pennsylvania abutment and the two renmaining land piers. The New Jersey abutment was recessed into

the rock bank on a shelf dug with a 1½-yd heavy-duty Owens clamshell bucket.

Before construction of cofferdams was started, pier sites were excavated to rock. The overburden of gravel and boulders varied from 20 ft thick at the Pennsylvania bank to 2 ft in the river channel near the New Jersey bank. The maximum depth of rock below mean water level was 15 ft; the minimum depth, which was in the main river channel, was 6 ft.

The DP2 cofferdam sheet pile was set around two 12x12 timber bracing sets framed together and held in position at the pier site by four bearing-pile spuds driven into the river bed. At three pier locations in the river where there was some current, timbers were framed to the top bracing set so they would bear against the foundation of the temporary bridge and aid in positioning the bracing sets. A No. 7 McKiernan Terry hammer was

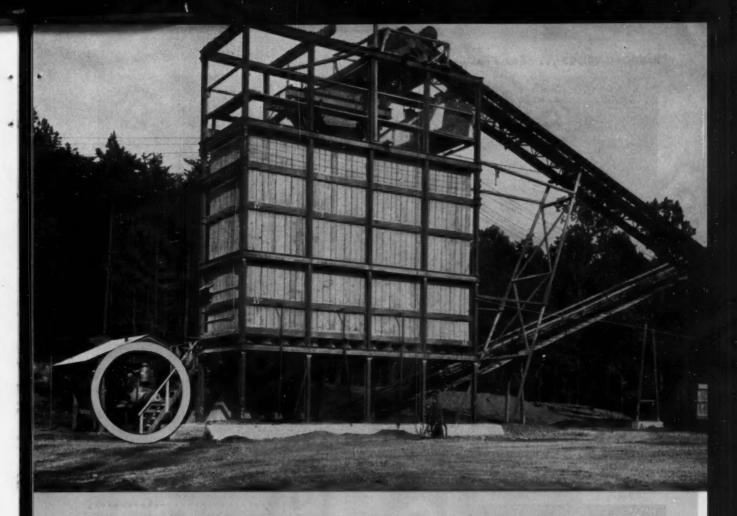
used to toe the sheets into the rock.

Four river pier cofferdams were pumped out, and the foundation rock cleaned off by hand. After flooding the cofferdams, the tremie foundations were poured. The three deeper flooding cofferdams for the two land piers and one river pier near the Pennsylvania bank were not unwatered. They were cleaned out with a 6-in. air-lift incorporating a 2-in. jet.

Cofferdam sheeting for four river piers was driven to refusal and left in place around the foundation to prevent undermining and to protect against scour. A diver cut the sheet pile off at the top of the pier foundation. Cofferdams for the other three piers were removed and the sheeting reused.

The underwater foundations for the seven cofferdam piers were poured directly against the cofferdam sheet pile through a tremie pipe to an elevation 2 ft below nor-

(Continued on page 70)



# 3 advantages with CAT Engines

... more power... cheaper operation... low maintenance

In its plant at Gretna, Va., the Airy Stone Corp. has three engines on three crushers. A Cat D364 Diesel powers a Symons 4-foot short head unit, while two competitive engines power the other crushers. Production averages 800 tons of crushed granite per 8½-

hour day, 20 days a month, all year round. About the D364, which replaced an engine of another make, Superintendent N. V. Colston says: "Our Cat has more power. It's cheaper operating. And maintenance is low."

That's a direct comparison, based on first-hand experience. And time and again, it's just what other users discover when they match Caterpillar performance against other power. Why? There are lots of reasons—here are a few. All Cat Diesels are ruggedly built to work with a minimum of down time. For example, complete engine sealing keeps out destructive dust. Cylinder liners, rocker arms and all crankshaft journals are "Hi-Electro" hardened for long life. As for low operating cost, these thrifty engines burn low-cost No. 2 furnace oil without fouling. That means less main-

tenance, cheaper fuel and less of it—a big over-all saving. And as for power, you know before you buy just what productive power you're getting—the HP on the specification sheet is conservative, not the stepped-up rating of a stripped-down engine!

What are your power requirements? You'll find the engine or electric set *just right* for your needs in the Caterpillar line—12 sizes up to 500 HP and 315 KW. Remember, your Caterpillar Dealer backs them with prompt service—whenever needed. Call him for proof of performance!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

## CATERPILLAR

WE'VE MADE CLAIMS...
NOW MAKE US
PROVE THEM



COMPLETED BRIDGE is a combination of clean-cut concrete piers carrying plate girder spans. A single track is ample because line

is a spur to new power plant, for which construction materials, fuel and maintenance supplies will be delivered by rail.

mal low water with the bottom bracing set left embedded in the pour. The cofferdam was then unwatered and the pier shaft formed in the dry.

Piers shafts are of solid construc-

tion with the sides of the shaft plumb and the nose battered at % in. per ft. This simple design required no intricate form work. Each shaft was poured in two lifts with excellent reuse of forms made possible by the similarity of the piers.
They were identical in top plan,
varying only in their top elevation.
From was built as a unit so

Each form was built as a unit so that after each use it could be (Continued on page 74)



The NEW ME-13 vibrator with new 2 to 2½ HP motor—greater power in a smaller "package."

ANNOUNCING MORE

# IMPACT

THAN EVER BEFORE!

A powerful vibrator that maintains its kick and speed EVEN IN EXTRA-STIFF CONCRETE!

Moves concrete faster WITHOUT extra high speed (which causes excessive wear of equipment).

Needs no special generator just 110 volt AC or DC.

Mounted on rigid or swivel base that keeps motor out of dirt, and prevents sand blowing into armature.

Satisfaction guaranteed. See it at your nearest WHITE equipment dealer.

White



STATIONARY ASPHALT PLANTS
15 — 30 tons per hr.



For prices, catalog and name of your nearest dealer, write —

WHITE MANUFACTURING COMPANY ELKHART 6, INDIANA

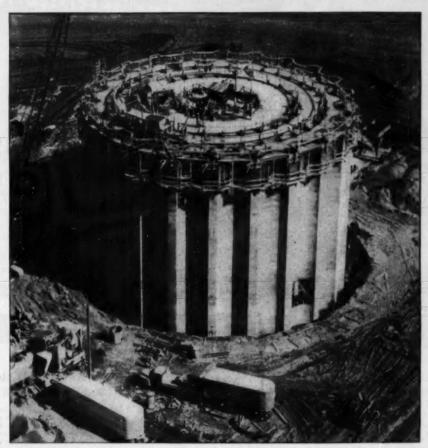
## CITY OF DALLAS WATER TOWER constructed with slipform method using

#### "CONCRETOR" HYDRAULIC JACKS

Four cylindrical walls poured simultaneously with 127 Jacks.

Outermost diameter 100 feet.

Note efficient platform working area.



Everything
Required for
Raising of Forms
Was Provided
By Us
Jacks
Yokes
Jack Rods
Pumps and
Supervising
Engineers

#### SYNCHRONIZED JACKING AT ITS BEST

CONTROLLED CENTRALLY OR INDIVIDUALLY

Whittle Construction Company, Dallas, Texas using Concretor Jacks and Slipform Equipment for first time raised above base of tower 83 feet in 126 hours.

Write our Engineering Department for full particulars on the Concretor system and rental plan available.

B. M. HEEDE, INC.
80 BROAD STREET . NEW YORK 4, N. Y.





HERE'S the way to outproduce your competition, handle any aggregate producing job that comes along. and do it at the low production costs that mean a tidy profit on every job.

The Cedarapids Unitized Plant shown above produced four products at a time...lime dust from 1/8" down, 3/4" Class A road rock, 3/8" minus material and 3/8" to 3/4" aggregate... at a rate of 210 tons per hour!

To meet specifications for other jobs, the basic primary crushing, scalping, secondary crushing and bin units can

be combined in dozens of different ways to produce any size products in volumes up to 250 tons per hour or more in quarry operations. And you get real economy in operating and maintenance costs.

Your Cedarapids distributor can give you all the reasons why Unitized Plants are your best bet for beating competition. Call on him today.

#### USE THESE 4 BASIC UNITS IN ANY COMBINATION

PORTABLE PRIMARY CRUSHER reduces raw ma-terial to a size readily handled by the scalping unit or secondary crushing unit. Single and Twin Jaw Crusher or Double Impelte Impact Breaker units available in a wide range of sizes.

SCALPING UNITS, consisting of a single or twin jaw crusher and horizontal scalping screen, re-move excess fines and dirt, and perform a crush-ing operation to reduce the circulating load for the secondary crushing unit. Choice of sizes.

SECONDARY CRUSHING UNITS are complete crushing and screening plants designed for high volume production of fine crushed products. Three types of crushers are available... roll, twin jaw or hummermill... to suit your job

BIN UNITS may be pertable storage and load-ing bins, as shown above, or wet or dry screen-ing, storage and loading units.

#### IOWA MANUFACTURING COMPANY

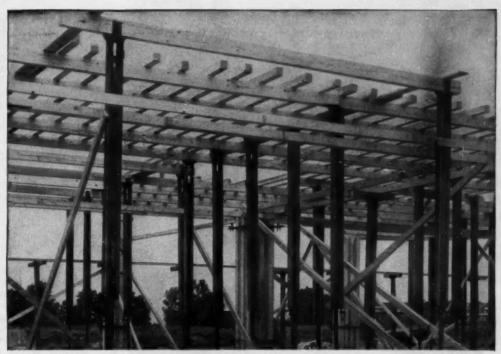
#### Cedar Rapids, Iowa, U.S. A.











Metal Scab & Tee Head. Scab slides down flush with top of share head when not in use.

Note use of Symons Column Clamps.

#### **Symons Safety Shores** Cut Costs on All Shoring Jobs

Symons Safety Shores keep all shoring jobs moving on a dependable, time-saving, cost cutting schedule. Their trouble-free performance is a matter of record. Here are 4 reasons why-

SAFE-SWAY BRACING . . . easily secured at any point.

SCAB, TEE HEAD and EXTENSION... enable shore to fill every shoring need.

WORKMEN PREFER . . . handling this lighter, easily adjusted shore.

LIFTING JACK and ATTACHED WEDGE . . . make possible easy resharing under heavy load.

Profit by the experience of the Construction Industry's leading builders. Use Symons Shores for those heavy load shoring jobs. There is no better way to make that tough job easy.

METAL SCAB **EXTENSION** 

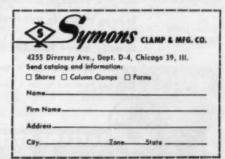
Send for Symons Engineering Tables for slabs, columns and beams. These tables will be a big help to your estimator, superintendent and carpenter foreman for determining forming, shoring and clamp requirements.

LARGE STOCKS OF SHORES AVAILABLE FOR RENTAL RENTAL MAY APPLY ON PURCHASE-90 DAY OPTION









stripped and reused without extensive dismantling and reassembling. Frame work was horizontal 2x8 girts, sawed to conform to the curve of the nose, and 2x8 studs spaced at 14-in. centers and backed by vertical double 3x6 wales. The form was lined with %-in. plywood nailed directly to the studding on the sides, and with ¼-in. plywood backed by ¾-in. sheeting for the curved nose. Richmond Tystruts and Tylags through the double 3x6 wales were used to rod the forms.

To facilitate stripping, forms were constructed with wedges between the girts where they framed together at the nose, so that

the form could be opened up about 6 in. by removing these wedges but would not come completely apart. It was then possible to lift it off over the top of the pour. It was a simple matter to replace the wedges and drive them home to button up the form and have it ready to set in place for the next pour.

The simple pier design with underwater foundations made possible rapid and economic construction. Piers and abutments were completed 19 weeks after the first equipment arrived at the job site. All concrete pours for the piers and abutments were made in 10

weeks.

The 3,330 cu yd of concrete used in the bridge piers and abutments were mixed at the job site by a 2-yd portable mixing plant. The mix plant had been designed especially to meet the requirements of this and similar construction jobs. One of its main features is that it can be dismantled into units which are within clearances for rail shipment. For this installation, it was shipped by rail to the nearest siding and trucked the remaining 5 mi to the construction site.

The mixing plant includes a silo for storing 500 bbl of cement, a screw conveyor and bucket elevator for handling the cement from either railroad car or truck to the silo, and the mixing tower. The mixing tower houses a 2-yd Smith 56S Model 487 mixer, aggregate and cement weigh hoppers, and aggregate and cement bins. It dismantles into five sections for shipment, with all the equipment except the mixing drum remaining in the dismantled sections. This makes assembly at the job site a quick and simple operation. The entire plant is transported on four standard railroad flat cars.

#### **Material Handling**

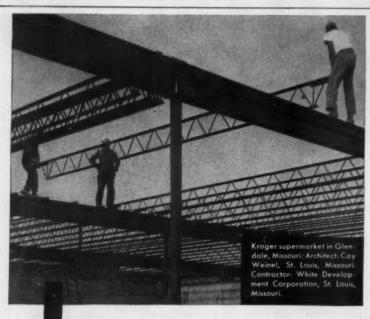
The plant was erected down river of the bridge centerline on low ground. A No. 6 Northwest crane on the bank behind the plant charged the bins at the top of the mixing tower from storage piles of aggregate hauled to the site by truck. Cement also was trucked to the site from a railroad siding 4 mi distant where facilities were available for unloading cement cars to trucks. Dump trucks with covered beds of 25-bbl capacity were used to haul the cement since it was necessary to cross a bridge with a maximum load limit of 20,000 lb. The trucks dumped into an enclosed chute which feeds the screw conveyor. A shed over the chute afforded weather protection.

Concrete was discharged directly from the plant into 2-yd bottom-dump buckets on a flat car and transported over the dinkey track to the pier site. The largest pour, 278 yd of underwater concrete for one of the pier foundations, was

made in 7 hr.

Dravo Corp. was contractor on the job. Bethlehem Steel Co. fabricated and erected the five 100-ft river spans, and railroad crews placed the ballast and track work.

W. R. Switzer was superintendent on the job for Dravo. Construction engineer for the Pennsylvania Railroad was James Lose, Jr.



## EASY DOES IT ...with lightweight, versatile LACLEDE STEEL JOISTS

Fast placing and erection . . . combined with modern design and strength make Laclede Steel Joists the answer to today's needs in roof construction.

#### **Specify these LACLEDE Products:**

Multi-Rib Reinferzing Bars • Steel Pipe • Welded Wire Fabric Form and Tie Wire • Spirals • Conduit • Corrugated Steel Centering





Multiple-part Red-Strand Slings are always trusted to handle heavy loads. They are easy to apply to both the load and the crane hook. User tests in Detroit proved Red-Strand slings withstood unusual abuse, yet maintained higher-than-rated strength.



A Gary plant uses Red-Strand single-part slings for many lifting jobs like this. These slings are available with various combinations of end fittings for attaching the sling to rings or lugs. Single-part slings frequently are the most economical to use.

#### How to Select the Correct Sling for Your Job

Start your sling selection by analyzing five factors:

- 1. The load its size, weight, shape, finish.
- 2. Working area, amount of head room.
- 3. Size and type of crane hook.4. Angle of sling legs.
- 5. Location and type of lugs or rings, if any.

This is basic information. From it, your supplier can recommend the sling by type, size and length that is safest, longest lasting and most economical for your job.

#### **Types of Slings**

Multiple-part slings are always recommended for heavy duty service, because for equal strength they are far more flexible than single-part slings. They hug the shape of the load easily, present a greater bearing surface to the load, and reduce the possibility of marring finely finished surfaces.

Where these factors are not so important, either Red-Strand single-part slings or grommet slings may be used for economy. Single-part Red-Strandslings are often recommended for lifting lighter weight objects, or those that have fixed attaching rings or lugs. Grommet, or continuous strand Red-Strand slings are ideal for forming hitches of various types without fittings.

#### How to Gain Extra Savings

Two suggestions will help you save money on

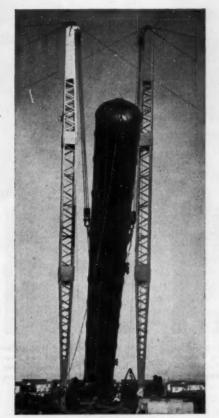
slings.

The first is to re-use
Pin-Lock thimbles on
multiple part slings.
They increase sling life
by protecting loops from

abuse or damage. Besides, these exclusive Leachen Pin-Lock thimbles cut sling costs on an average of 21% because they may be used again and again. They lock into sling loops with pins instead of permanent clamps, permitting re-use, and eliminating constant expense of thimble replacements.

The second suggestion is to use Red-Strand slings—for a very simple but good reason: Red-Strand slings are made of higher-than-rated quality Leschen wire rope that delivers longer-than-expected service.

Get a copy of Leschen's Sling Handbook for complete information. Ask your Leschen man for one, or write.



A heavy cylindrical load like this usually calls for the use of multiple-part Red-Strand Flat-Laced slings. They are strong, flexible and do not slip or abrade on smooth round surfaces.

#### LESCHEN WIRE ROPE DIVISION

The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri









Modern power steering for sofe, sure control of CraneMobile on the read and easier maneuvering into position on the job. Reduces road sheek and driver fatigue, too.



Air brakes on all six wheels of a BAY CITY CraneMobile are there when you buy it. Some rubber-lived cranes have air brakes as standard equipment on only the rear wheels.



Big engines with relatively slow RPM are standard on all Crane-Mobiles. They provide all the power yeu will seed for distant travel and "on the job" use.



Independent boom hoist of the self-locking worm and worm wheel type with automatic brake insures safety and speed in raising or lowering boom or boom and load.



Collapsible hi-gantry, floating bridle and boom back stops give positive control of long or short booms in every operating position.



Power load-lowering device consisting of idler gearing between draws permits controlled lowering of loads against engine compression without braking.



Main and auxiliary transmission provides 12 forward and 3 reverse speeds for maximum efficiency on the road, better performance on steep grades.

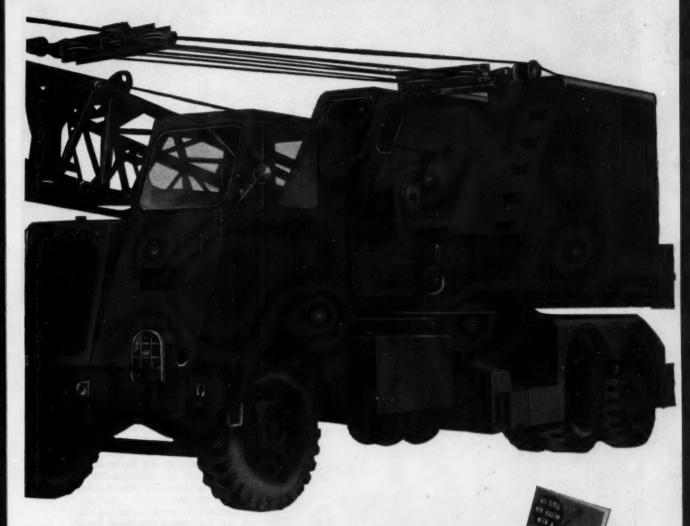
Photos illustrate the 25 ton capacity Model 190 T61 CraneMobile.





**BAY CITY** 

## standard on the BAY CITY <u>CraneMobile</u> at no extra cost!



The seven major features illustrated here, plus many other operating advantages are original equipment in the BAY CITY CraneMobile. Some of these features may be available as extras on other machines but only in the Crane-Mobile will you find them all as standard equipment at no additional cost.

So, we suggest you make your own comparison. Compare the outstanding features and advantages of BAY CITY with any other rubber-tired crane on the market. Compare for quality—for durability—for performance. Yes, check the lifting capacity with various booms at different radii—check the ability to raise maximum recommended boom without assistance—check boom hoist action to see if it will raise or lower boom and load under controlled power only—check for ease of operation. Then you will know why we repeatedly say "All Lifts are Easier with a CraneMobile", because BAY CITY gives you most.

Let our local representative show you the CraneMobile at work. There is one near you.

BAY CITY SHOVELS, INC. . BAY CITY, MICHIGAN

SHOVELS . CRANES . HOES . DRAGLINES . CLAMSHELLS

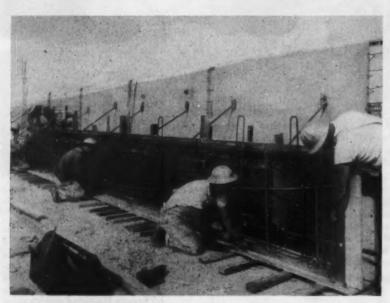
#### Write for this booklet

Get this handy pocket-sized booklet of facts and features showing why "all lifts are easier with a CraneMobile". It's loaded with information, it's neatly illustrated and it's yours for the asking . . . Write us.



CRANE ERECTS PRECAST MEMBERS in rear hard on the heels of casting and prestressing operations on the floor slab. Form builders

#### **Precast Structural Members Produced**

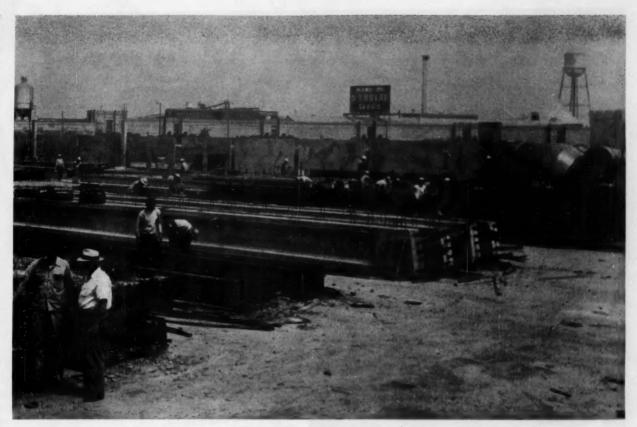


GIRDER FORM becomes almost a precision essembly to avoid failures and lateral movement when low-slump concrete is poured and vibrated. Reinforcing receives extra attention.

EVERYTHING HAPPENED almost at once in the rapid-fire construction of a beef exhibit barn within 49 working days by Peter Kiewit Sons' Co. at Los Angeles for the California 48th District Agricultural Association.

The structure measures 338 x 232 ft and features a prestressed roof-framing system made up of 50 girders, typically 50 ft long and 40 in. deep, and 406 purlins, typically 36 ft long and 17 in. deep. Typical bay spacing is 50x36 ft. Interior columns are pre-cast and exterior columns are poured in place. The perimeter wall, made of precast panels, is 18 ft high and the nearly flat roof is poured-in-place.

Specifications required the contractor to design prestressed girders and purlins and that he use a mix that would produce 5,500-psi concrete in 28 days. Purlins and girders were designed by the Freyssinet Co., whose system of stressing was used.



and pouring crews work adjacent to stock-piled purlins and girders ready for erection. Transit-mix concrete was used.

#### On Floor Slab of Beef Exhibit Barn

A concrete mix of 8 sacks of cement and 1 lb of Master Builders' high-early Pozzolith per sack of cement was selected after several trial mixes. Test mixes without high-early Pozzolith failed to come up in strength soon enough. The low unit water content concrete achieved through the use of Pozzolith proved of benefit in both the plastic and hardened stages, particularly in reduced volume change and shrinkage.

To meet a deadline which allowed only 49 working days to cast, stress, erect, and pour the roof slab, an operational sequence was developed which permitted a production line flow of precast members into their respective positions in the structure at the proper time. Wall panels, girders, purlins, and interior columns were arranged on the floor slab in a position to allow transit-mix trucks and cranes to move about.

(Continued on page 82)



GIRDER STRESSING (Freyssinet method) is done with jacking equipment mounted on dolly. Fast-moving job had several men busy on this work, kept wire suppliers on the jump.



#### Operator's Pride Key to Low Shovel Maintenance



By
R. G. THIBAUT
Service
Manager,
The Thew
Shovel Co.

The pride of the operator in his job and his machine is the real key to low shovel-crane maintenance cost. If the operator takes enough pride in his machine and his job to see that proper lubrication and servicing is done on a regular schedule, costly shut-downs and repairs can be avoided.

All manufacturers want their machines to get the best of care — want them to serve the contractor well and safely throughout a long and trouble-free life. To that end they publish operator's manuals with preventive maintenance, adjustment and lubrication instructions and proper operation procedures. However, no one but the operator, or the master mechanic, can see that these programs are carried out completely.

Easy-access grease fittings and simplified adjustments are provided to make this part of the operator's job easier. Permanent lifting capacities mounted in the cab make it easy to keep loads within safe limits. But, the operator himself is still the key to the problem, because he is the only one that can implement the planning that is done to assure trouble-free operation. If he really knows his machine, and maintains and services it as the factory recommends, and does not abuse it, operating and maintenance costs will be reduced to a minimum.

It is a standing joke that women do not read instructions on new equipment they buy such as washing machines, cleaners, etc. Service engineers can testify that some operators apparently never read their service manuals either — or if they do, they don't remember what they read — or don't care.

It all comes back to how much pride the operator has — in his job, in his machine, and in himself. That is what really gets the most out of a piece of equipment — at lowest operating cost.

(Advertisement)



You know then that a good, profit-making crane is more than a crane boom and hook block, but a well-balanced tool, with proper equipment to fit your job needs. The Lorain TL-25 crane—in the 3/4 yd. class—does just that. Here are a few of the features you get as standard or available equipment.

Power Load Lowering at variable engine speeds, enables loads to be backed down, under power and clutch control, for accurate and safe placement.

Precision Boom Heist is a "must" for steel erection. Provides continuous engagement between engine and derricking mechanism to give any degree of power-controlled boom lowering speed and precision desired.

**Third Drum\*** permits a third line for "snaking" material in close to the machine or the operation of a whip line along with both regular hoist lines. Particularly useful when using crane as pile driver.

All Welded Boom-boom stops-swing brake.

Choice of 3 Crawlers in general purpose, extra long and extra long-extra wide sizes. The latter is 12' 6" long by 11' 8" wide and because of its maximum stability and ground bearing area is ideally suited for crane, dragline, clamshell and soft-ground operations. 29" wide tread shoes also available.

Complete Convertibility, dragline, clamshell, hoe or shovel.

\*Extra Equipment

THE THEW SHOVEL CO., LORAIN, OHIO



## COMMENT from the BUTLER ENGINEER

#### - A Plant ain't like a suit of clothes

When you buy a Roadbuilders Plant or a Ready Mixed Concrete Plant, you virtually take on the manufacturer as a partner. So it's just good sense to look long and hard at the manufacturer's past, present and probable future. You are investing not only in bins, batchers and conveying systems, but much more in allied equipment.

Yet the Plant itself is the heart! If the manufacturer lacks in engineering, construction know-how or knowledge of the practical operating problems in your field, the heart is less efficient, less competitive, less profitable. And to that degree you jeopardize your entire investment.

If you buy a suit of clothes and it doesn't fit, you can hand it on to a brother-in-law. A Plant is something else. You just have to live with it. Or try to.

Less than a half dozen manufacturers specialize in such Plants. All are good. They know your field, your production problems—and they have pre-engineered, experience-proved, standard components plus the ability to "dovetail" every detail to make the entire Plant a successful and profitable unit.

So, go to one of the small group who are tops in a highly complex job of manufacturing.

Naturally we hope it will be Butler. Butler offers engineering for all your problems. After all, engineering is the ability to put every dollar of your investment to the most efficient and productive use. And that's what Butler does.

Anyway, choose an expert for an expert's job.

The Butler Engineer BUTLER BIN COMPANY WAUKESHA, WISCONSIN



READY-TO-POUR girder form shows placement of reinforcing and prestressing wires. Extending loops become lift points. Clear area at right permits crane and truck movements.



PRESSURE GROUTING the wires after all have been tensioned in the purlins. Neoprene hoses were installed in purlin forms, pulled after pouring and wires placed.

Because of the number of precast elements—there were 100 wall panels, 50 girders, 406 purlins, and 40 interior columns—it was not possible to cast all of them in separate casting areas. Therefore a casting, erecting or storing, and stressing sequence was used which permitted multiple use of the floor area. Purlin and girder forms were

moved from one area to the next while wall panel forms were being moved along the edge of the floor slab.

Casting of purlins and girders was a meticulous operation which required much attention to the workmanship of the reinforcing ironworkers and the concrete

(Continued on page 86)



...BROOKLYN

SEWER MAKES

PROGRESS HEADLINES

"IN THE DRY"

HERE'S WHY: A Moretrench Wellpoint System, working in sand and silt, kept 17' of water under perfect control. One pumping set-up dewatered 1500' of trench. Banks were sloped. No sheeting or bracing needed. The firm dry trench permitted use of a special traveling form built by the contractor (see Engineering-News-Record 11/19/53).

Exceptional progress with economy and safety made this job outstanding.

Your wet work can be profitable too. Start it right—in the dry with a Moretrench Wellpoint System. Our nearest office will tell you how.

#### MORETRENCH CORPORATION

90 West St. New York 6 4900 S. Austin Ave Chicago 38, Illinois 770) Imericay Blvd.

315 W. 25th St.

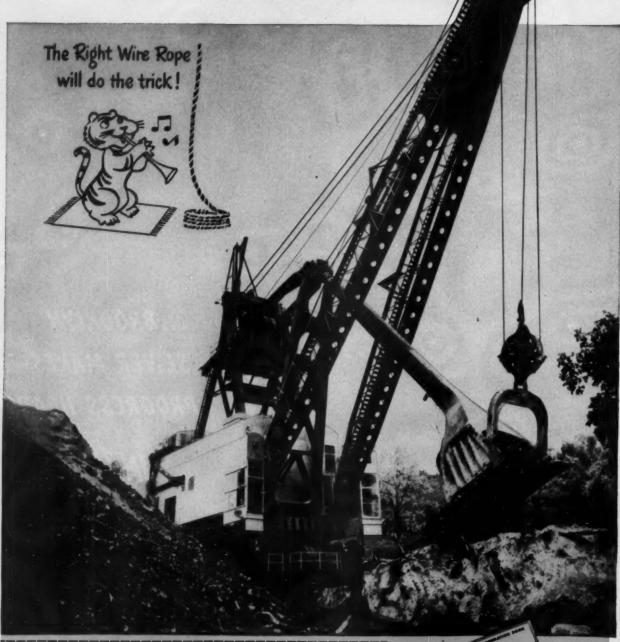
Rocksway

Western Representative: Andrews Machinery of Wathington, Inc., Seattle 4, Washington

Canadian Representatives Goo. W. CROTHERS Limited, Tereste, Ontario

12,587 carloads

of



American Steel & Wire Room 842, Rockefeller Building Cleveland 13, Ohio

FREE ROPE BOOKLET ->

Please send me, without obligation, a copy of your booklet, "The Right Rope for the Job," which lists the correct Tiger Brand Ropes to use for hundreds of typical applications.

Name

Address

City & State

Right

## overburden moved with one Tiger Brand Hoist Rope

I MAGINE 12,587 50-ton freight cars strung out end-to-end. They would make a train more than 80 miles long; and if each car was level full, the entire train would contain 1,000,000 cubic yards of material. That's how much overburden this big coal stripping shovel moved with one American Tiger Brand Hoist Rope.

Despite hard digging, a 23%" Tiger Brand Wire Rope lifted and lowered the fully loaded 45 cu. yd. bucket 20,000 times before it had to be replaced. This equipment is used by Central Ohio Coal Company which supplies coal for The Ohio Power Company's new Muskingum River electric power generating plant. This company also uses Tiger Brand Wire Rope on its 18 cu. yd. shovels.

You will like Tiger Brand, too. It lasts long in any type of service.

Send the coupon for our recommendations of the right rope to use on your machines,

This 18 cu. yd. electric shovel and the 45 cu. yd. job shown on the opposite page are stripping overburden 3 shifts a day every day at Central Ohio Coal Co.'s big Muskingum Mine near Zanesville, Ohio. Tiger Brand Rope is giving excellent service on both these hardworking machines.



Regular lubrication of sheaves helps prevent excessive wear of the Tiger Brand Ropes on these big machines.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAM FRANCISCO . TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL



PRECAST INTERIOR COLUMN is set on footer and steadied on P&H truck crane while workmen secure it with a temporary, adjustable steel brace. Wall panels have been cast flat and then tilted into place to fill openings between poured-in-place exterior columns.

placers. The forms, precision built, required constant attention to prevent breaking down, and very substantial bracing of the girder forms for pouring was essential to prevent lateral movement of the long, narrow forms.

Pouring was slow due to the fact that the girder web was only 6 in. wide and contained one or more of the high-tensile metal housings, and this condition was not improved by the specified use of concrete with a maximum slump of 3 in. Had not the contractor increased the web to 6 in. thick from the originally specified 5-in. thickness, the pouring operation might have developed into a much more serious problem.

Purlins, with a depth of 17 in. as against 40 in. on the girders, did not constitute as great a pouring problem, but they too were increased in web thickness from 3 to 4 in. Air pockets on the bottom flange and pushing out of alignment of the high-tensile cables were the main obstacles. These problems were partially overcome by pouring concrete at a very slow rate.

Girder forms tended to bind in



tight between the top and bottom flanges, and the forms had to be heavily secured to prevent pulling them apart when stripping. Purlins were completely formed before placing steel.

Because of the necessarily fast construction schedule, high-tensile steel could not be delivered in time to keep up with the purlin production rate. In order not to slow down on the purlins, 1¼-in. round neoprene hoses were installed instead of the high-tensile cables.

After the concrete had set, the hoses were pulled out and the high-tensile wires were later pulled through. The stressing operation required 3 to 4 men at all times since it was necessary to measure wire slippage at one end, elongation at the other end, and check gage pressure reading during the stressing of each unit.

By the time the first end wall panels had been set and secured by poured-in-place exterior columns, the first bay of girders and purlins was stressed, grouted and ready to set. The girders were set with two cranes and the purlins by one crane.

As soon as one bay of purlins was in position, roof deck forms were set, and roof slab was poured. Each typical bay of purlins covered an area 36x234 ft. After stripping the roof deck forms, a slight upward camber was still noticeable in the purlins and girders.

#### Safety Record

The operation involved the handling and setting of more than 4,000 tons of concrete members, all done without any injury to workmen on the job.

The big "cow palace" was built under a contract with California's Division of Architecture whose resident inspector is Earl McKay. Superintendent for Kiewit was Lew H. Adams, and project engineer was Charles J. Pankow, Jr.

#### Is Safety a Habit?

Isn't it a notable fact that the same names tend to appear in the lists of safety award winners year after year? This fact suggests that safe operation of a construction business not only can become a habit but that safety also carries rewards in addition to the ones handed out in the pleasant limelight at annual conventions.



## An equipment lesson from the Alcan project

. . . 61 CARCO winches needed on the job



Doubling the pulling power of the most power-ful crawler tractors calls for a gear train that's tough and rugged. The Carco Model J winch converts tractor power into line pull efficiently and directly through a 4-stage, constant mesh gear train. The doubled line pull is made possible by a high ratio of gear reduction. As faster line speed is generally desired for paying out the line, a lower gear ratio is provided in reverse. Heavyduty gears and shafts of heat-treated special alloy steel guarantee a large overload capacity. Precision cut, gears and shafts, with anti-friction bearings, operate in a continuous oil bath. Rugged simplicity and fewer parts make Carco winches more dependable and easier to service.

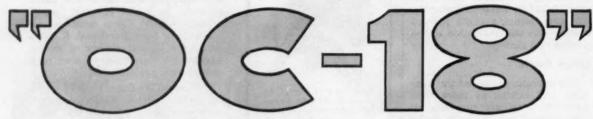
Probably the most versatile equipment on the Alcan project in British Columbia are powerful crawler tractors equipped with dozers and Carco winches. So useful has this "team" proven that 61 Carco winches and hoists have been purchased for this job...the largest number of tractor winches ever known to be used on a construction project.

Pictured is a Carco Model J winch on an International TD24 using tractor's own power to pull this heavy crawler up a steep hillside so it could doze access road down hill.

Powerful, mobile Carco winches double tractor pulling power and increase tractor "reach" . . . they will earn their way for towing, hoisting, loading as well as for emergency rescue equipment. Remember, you can expect greater value from the leading producer, and get it from Carco, first in winch production. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branches at Portland, Ore., and Franklin Park, Ill.







#### adds power under load for extra profit!

As the husky diesel engine of the Oliver "OC-18" slows under load, lugging power steps up to meet demand. That's one reason why this big tractor will get down and lug through the heaviest going... deliver a steady flow of power to speed work, boost production.

Another reason you can count on the "OC-18" to add extra profit is Controlled Differential Steering. This steering principle gives you a two-track grip on the ground at all times. There's full power on every turn and steering is the same uphill, downhill, pushing or pulling.

The "OC-18" gives you more power for the money, too. Balanced design eliminates dead weight and puts every ounce of power to work at lowest fuel cost. In fact, the "OC-18" has the greatest power-to-weight

ratio of any tractor in the 133 drawbar h.p. class. It's this design, too, that reduces down time and makes maintenance so simple and inexpensive.

Your Oliver Industrial Distributor will be glad to show you the Oliver "OC-18" in action. Call or visit him soon for a demonstration.

#### THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

A complete line of industrial wheel and





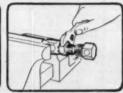
crawler tractors.



few fittings you can fill practically all your hose line requirements. YOU REDUCE DOWNTIME because with Aeroquip on hand, quick hose line replacements are available at all times.









AEROQUIP CORPORATION, JACKSON, MICHIGAN

SALES OFFICES: Burbank, Calif. • Dayton, Ohio • Hagerstown, Md. • High Point, N. C. • Miami Springs, Fla. • Minneapolis, Minn. • Portland, Orc. • Van Wert, Ohio • Wichita, Kans IN CANADA: Prenco Progress and Engineering Corporation Ltd., Toronto • IN ENGLAND: Super Oil Seals & Gaskets, Ltd., Birmingham

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

#### How One Contractor Decides What Truck to Buy

	MAKE & MODEL	MGVW	CHASSIS AND BODY	PAYLOAD	TIRES	ENGINE	CLUTCH	BRAKES	FRAME	SPRINGS	TRANS- MISSION AXLE
PACTORS	WHITE WC-26T 148" W.B. CA72	60,000	TRIN-10000 TRACTOR-10,000 20,000	40,000	1100 x 22	386 CU.IN. 145 HP@3000 6 @ 4x5/0	14"	AIR 12 C.F. 36"5TH WHL	8/6 x3/16 x 5/16 9.9	F 12-21/2×41 R 12-3×46	5078 DIRECT 2 SPEED AX 6.14 - 8.3
						0 40 47.578					0.74 " 0.34
	000GE YA142	60,000		40,000	1100 x 20	4/3 CU.IN	13"	AIR	10 % x 3 % x 1/6	1	2 SPEED AX
	142" WB				14 PLY	171@3200 6-4%x5%		36" 5" WHL	13.5	R 3x52	OVER DRIVE 6.63 - 8.5 54-63 MP
	FEDERAL 4402	57,000		37,000	1100 x 20	427 CU IN.	14"		9/8×3 × 5/16	F 11-21/2×42	
	148"WB CA72"				14 PLY	170@ 3000 6-4%6×4%		36"5" WHL R-16/2x6 x 3/4	11.6	R 12-3×54	DOUBLE R.
						0 4761478		A-10/2AUA 74			290 VO CLA
	INTERNATIONAL R205			75 404	1100 20	252 211 111			-k -k %		
	157"WB CA84" 142"WB CA69"	55,000		35,000	1100×20	450 CU. IN.	14"	A/R 12 C.F. 36" 5" WHL	9%×3½×56 12.80	R /3 3×56	2 SPEED AX
-	142 40 64 67				17/1/	6-43/x5		R-164 x 6 x 3/4	9/4×3/4×1/4	8-3×36	F 54 TRAN
									8.65		641 - 8.3 49-63 MP FULLER
					1 2 1						5A620
	FEDERAL 6002	70,000	22,000	48,000	1100×22	501 CU.IN.	15"		10%×3%×36		2 SPEED AX
			-		12 PLY	182 @ 2800		36" 5 WHL	14.8	R15-3 ×56	0 300 - P 642 70 83
						6-41/2×5/4		R-16/2×7×34		9-3×45	FULLER SAL
ATFORM	REO F-22RL	24,000	11,000	13,000	1000×20	331 CU.IN.	13"	HYDRO VAC	91/8×31/6×5/16	F 16-3 × 48	L 200 DOUB. A
OUMP	120°CA 185" WB				12 PLY	/47@3200	189 SQ. IN.	438 SQ.IN	F.P. 11 x 1/4	R-15-3x50	CLARK 290
	GARWOOD HOIST					6-4%×4%			13.5	10-3×33	TRANS
ATFORM	WC 20 WHITE	23,000	11,000 ±	12,000	1000 x 20	340 CU.IN.	12"	HYDROVAC	8×3×1/4	F18-2/4×39	502B DIREC
DUMP	196 "WB GARWOOD HOIST 6'27					120@3000 6-4"x4/2"		499 SQ. IN.	6 1/4 × 1/4 9.73	R 16-3×54 8-3×36	107 C SING
-	78 174 DODGE	22000	11,000 ±	11,000	1000×20	33/ CU. IN.					-
	FII GARWOOD HOIST	22,000	11,000 =	77,000	12 PLY	172@ 4000	12 1/8	HYDROVAC	10×3×1/4	F 3x48 600	DIRECT 5
	F21 11 11					8-31/2×35/8		425 SQ.IN.	10.7	R 3×52 17000	
	FEDERAL 3401	24,500	11000 ±	13,500	1000 x 20	371 CU. IN.	14" ×	HYDROVAC X	9/8×3×5/16	F10-24 x 42	TIMKEN L2001
	196"WB CA 120"				12 PLY	145 @ 3000 6-4/2×5/2	F 16×3 R 16½×5 466	466 SQ.IN.	11.65 10 x3 x 14	RII-3×54 7-3×38	DOUBLE REP DIRECT S CLARK 290
	MARION-7268L-LESS 1000									5300	FULLER SM
-	INTERNATIONAL R 192	25,000	14000 ±	14,000	1000 x 20	406 CU. IN.	14"	HYDRO VAC	9x3/2 x 1/4 10.2	F 9- 3 x 52	DIRECT 5 F-52-CTRA DOUBLE RE
-	193°WB CA120 ST PAUL H 20F HOIST				IZFLY	154@3200 6-4%x4%	F 15x2/4 487		9%x3%x4	R 13-3×54 8-3×36	EATON 264
	9 TON						R-16 x5		8.65		
	DORSEY DT-18 - 3		10,400	1100x20	(2)-18000 EA.		12-3/2×42×1/4				
	TANDEM - 54,000	GVW			5" DIA	16/2×6		3/2"FLANGE 12" CENTER			
	KP-34"				3% SPINOLE TÜBÜLAR	46		6" DROP			,
	HIGHWAY - TL 34	CP	11,000	1100×20	5" DIA	B.W.	15 3×42×3/8	1/4"	3/8"	13/16	5/32×5
	TANDEM -			12 PLY		16/2×6		31/4"	3"	T&G OAK	12" C.C.
-	MUD FLAPS- AL= 49" TL=104	11			2-18000*EA			10 " 5" DROP	8" TRUSS	RUB RAIL	
	KP=38"							TRUSSED	6 77033	STAKE POCKER	
	FRUEHAUF PMGT	30 TON	14100	1100 x 20	(2)3/4×4%	16/2×6	TORSION	3/8"	8"CHANNEL	146 746	4"
-	TANDEM 34'	PRICE		12 PLY	3/2" SPINDLE I- BEAM	B.W.	TANDEM	21/2"	TRUSSED	OAK	18" C.C.
	AL=7'-2" TIRE CA KP=36" MUD F				40,000#			10%" 4" DROP	THUSSED	STANE POLNETS	
								TRUSSED			
				1							
	TRAIL MOBILE WIL	662	11,000	1100 x 20	(2) /8,000 #	16½x7x34	11-35x41x36	8/16	7/32	1%T4GOAK	18" C.C.
	I KAIL MUBILE WIT					The second secon				Control of the second	
	34'			12 PLY	5" DIA			3/2	2"	RUB RAIL	
	The second secon			12 PLY				15"	2" 6½ 6"TRUSS	RUB RAIL STAKE POCKETS 134 x 3 x 5/16	

#### And Then Maintains Even its Electrical System



WITH HIS RIGHT HAND adjusting a rod to find maximum spark gap, Jack Bennick watches magneto and checks its performance after overhauling it. Motor, hooked to rheostat, turns mag at vital cranking speed rather than at regular motor rpm. Final action is to . . .



... HANG UP each completed job after a paint or spray job. Note two days' work here that includes five magnetos, three carburetors and a truck generator. It's all part of Corbetta Equipment Corp.'s automotive maintenance that includes all electrical work.



HERE JACK TALKS with master mechanic Anthony Dentato about a portable generator they've overhauled. They had a perfectly good Onen generator but its stub shaft would not allow connection to several spare Wisconsin motors. They removed the stub shaft, replaced it with a protruding type and machined the aluminum end bell. Now it can be attached to any spare motor they have.



BEFORE THIS NEW Red Devil generator went out to a field job they fabricated the lifting frame and eye and welded a curved piece of steel over the voltage regulator to save it from damage later on. The lifting frame precludes some job joker from slipping a sling under the generator housing, gas tank or other vulnerable parts of the wheeled rig.

THE COMPARISON CHART at the left is a clear-cut indication that contractors don't just go out and buy "a truck" but, instead, analyze and compare all of the features, benefits and qualities available. The same is true of truck-tractors, trailers and other equipment, too, as the chart further indicates. It's still true when crawler tractors, truck cranes or any other piece of equipment are involved.

We came across the chart in question quite by chance during a routine friendly visit to Wallace Buhler, manager of the equipment subsidiary of Corbetta Construction Co., New York. And, as often happens in these instances, a quick but concentrated look around the

shops uncovered several other shortcuts, suggestions and moneysaving ideas.

But getting back to the chart for a moment; the Corbetta company needed a fleet of flat-bed dump trucks. Nobody had them. Regular dump bodies, yes; and rigid flatdeck types, too. But no manufacturer had the combination of the two. So a list of specifications was prepared, leaving nothing to chance or guesswork. After the specs had gone out and bids came back in, Federal Bronx Truck Sales got the job to furnish them. Wally's chart might well serve as a guide both to manufacturers and to other contractors.

The Corbetta Equipment Corp. (Continued on page 94)



MEANWHILE WALLY BUHLER, shop manager, checks with truck manufacturers to obtain alternate and replacement information. On the desk in front of him is the comparison chart reproduced at the beginning of this article, which shows him the important information on each type at a glance.

## We proved it to Barrett Co.

\*Barrett Construction Co. BLACK DECKER

Page 92 — Construction METHODS and Equipment — April 1954

## tack & Decker Saws are <u>built from the job up</u> to give you every feature you want!

## -we'll prove it to you!

Top-notch men on a top-notch job—that's the Barrett Company crew of carpenters helping build the St. Joseph's School in Mountain View, California. As part of an "in-the-field" demonstration series, we took a new B&D Saw out on the job and turned it over to those men. And how they used it! They tested it again and again for power . . . trying new features for safety and convenience . . . subjecting it to

rough treatment for durability, weight, and balance. And then they put the O.K. sign on it. To quote Carpenter Ernest M. Alonso: "These new B&D Saws have more than enough power and speed for all the jobs we have to do. New features like clear visibility and lever on the lower guard are wonderful improvements. In all the years I've been a carpenter, I've never seen features like these."

#### B&D Saws have all these features!

EASY-GRIP HANDLE at natural sawing angle plus extra hand-hold—and cord is out of way!

**POWER TO SPARE** for the toughest jobs . . . and motors are B&D-designed just for these saws!

HUSKIER BUILD, larger shoe for solid base, greater stability at any depth or angle!

2-POINT SUSPENSION . . . not one but two big wing nuts hold saw steady at every depth and angle!

SAFETY-LIFT GUARD...large guard lift-lever lets you retract lower guard by hand safely!

MAN-SIZE CONTROLS, big trigger switch, heavy wing nuts give faster action, quicker adjustments!

#### Win \$1000.00 in Big B&D Saw Contest!

AT YOUR DEALER'SI See and try the great Black & Decker Saws yourself . . . and join the B&D Contest! Ask your dealer to show you the new B&D Saws, try them yourself, and note their features. Then fill out the official entry blank. Your dealer will do the rest . . and you'll be in line for the grand prize . . . \$1000.00 . . . or one of the many other cash awards. See your dealer now! For the dealer nearest you, see the where-to-buy-it section of your

local telephone book, under "Tools-

ON THE JOB! To make the big B&D Saw Contest even easier for you to enter, we'll arrange to have the new B&D Saws brought right out to your job site, demonstrate them to you, let you try them yourself! And you'll get your official contest entry blank right then and there. To arrange for this, just fill out the handy coupon below and mail it to us today!

#### BE SPECIFIC - SPECIFY BLACK & DECKER



NEW B&D 8-inch HEAVY-DUTY UTILITY SAW—Cuts from 0 inches to 21½ to inches deep ... bevol cuts from 0°to 45° ... depth of cut at 45° is 21½ inches. Built-in depth-and-bevel adjustments ... \$96.50

NEW B&D 9-inch HEAVY-DUTY UTILITY SAW—Cuts from 1/4 inch to 31/4 inches deep . . . bevel cuts from 0° to 45° . . depth of cut at 45° is 21/4 inches. Built-in depthand-bevel adjustments . . . \$114.50

ALSO: New B&D 6-inch Adjustable Saw . . . \$64.50; new B&D 7-inch Saw . . . \$84.50. Both Heavy-Duty Saws with all the features described above.



For address of neare distributor see "TOOLS - ELECTRIC"

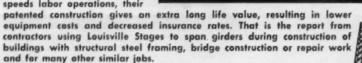


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#### ALUMINUM STAGES

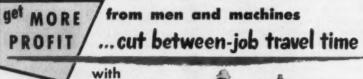
20 inch wide Louisville Stages are designed for heavy contractor service. Their light weight speeds labor operations, their



WRITE FOR THE WHOLE STORY ON LOUISVILLE STAGES.

ALSO-A COMPLETE LINE OF **ALUMINUM LADDER EQUIPMENT** 

UISVILLE LADDER COMPANY 1101 W. OAK ST .- DEPT. E - LOUISVILLE 10, KY.





This big, rugged trailer loads dozers, rollers and other cumbersome equipment in less than two minutes. Ground and platform merge into one surface ... for the easiest loading of heavy equipment you have ever tried. With Miller Tilt-Top just one man loads . . . is off to the next job, with no lost motion. Miller's faster loading, quick maneuverability provides more time on the job, less time between jobs . . . Increases your profit from every operator, every machine every day.

#### research engineers

457 S. 92nd Street, Milwaukee, Wis.

#### handier easy-to-back priced right

Model "B" 10 ton \$1175\*

Optional equipment (priced extra) 16' long platform (8'x14' standard), hydraulic tilt control, 2 speed hand winch and electric brakes.

Plus freight and Federal Tax.

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#### AUTOMOTIVE MAINTENANCE . . .

Continued from page 91

follows the general rule of active construction companies with a lot of equipment, in that they handle 95% of all their upkeep, maintenance and repair on automotive and heavier equipment. Exceptions to the rule would be the planing of a head, for instance, grinding of a crankshaft or a complete radiator overhaul. But when it comes to reboring cylinders, installing bearings, rings, sleeves, valves and valve springs, Buhler follows the general pattern and does almost all the work with his own shop forces. The same goes for gaskets, brake lining, and replacement of accessories such as rear-view mirrors, battery cables, directional arrows, wipers and hose.

Where the company deviates from the norm is in its active program of repair and maintenance of electrical components. There's a specialist in the shop who checks and rebuilds magnetos, generators, regulators, starters, and almost everything connected with the ignition system. When there's nothing in the electrical line to fix up, he turns his attention to fuel pumps, carburetors, breathers, etc.

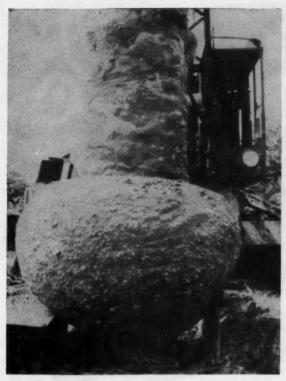
#### **Cranking Speed Counts**

Take magnetos, for instance. A repair shop in the vicinity of one of the many Corbetta jobs would assure the company that magnetos they had overhauled were working just fine. "Trouble was," says Wally Buhler, "that they were turning over the mags as usual with the help of an electric motor and a gear. If there's anything that will produce a real hot spark from a mag, it's a high rpm."

The Corbetta man, on the other hand, has a similar motor-andgear arrangement, but it's hooked up to a rheostat. In that way he can cut the motor down so that it's turning the mag at cranking speed. "That's where you need all the spark you can get," says Jack Bennick, the electrical system repair man. "If you get a good spark at cranking speed you know that the magneto will be fine at any increased speed."

The same attention is paid to every other phase of equipment maintenance in the Corbetta organization, so it's no wonder that the company enjoys trouble-free operation on its far-flung jobs. It's certainly ample proof of the truth in the old adage about the stitch

in time.



DENSE, SYMMETRICAL BULB, 5 ft in dia, had formed at bottom of pressure-injected footing. Soil surrounding plug driven down also had been compacted to several times its original value.

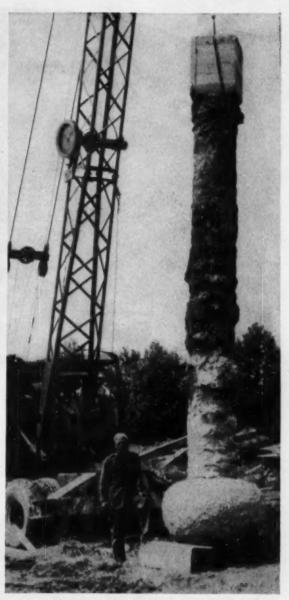
## Footing in Loose Sand Supports 250 Tons

PRESSURE-INJECTED FOOTINGS—their placement without the use of critical materials and their inherent load-carrying ability—now have been demonstrated graphically in this country.

Franki foundations (often misnamed "piles") are relatively new to the U. S., although they have been employed more widely than any other comparable foundation all over the world for many years by a group of Belgians. (Construction Methods and Equipment reported on a Franki-placed foundation for an apartment house in this country in June 1953, p. 102.)

New York City last year advertised for bids for its proposed Coney Island General Hospital. Franki Foundation Co. received permission to demonstrate its pressure-injected footings on the site in a late attempt (too late, it developed) to submit an alternate foundation design.

The area occupied by an existing hospital building, and that designated for the new structure, originally had been marsh land through which flowed Coney Island Creek. Boring showed ash fill from 3 ft below ground surface (El +6.5) to -6.5; soft, dark



EXHUMED CAISSON is a highly compacted shaft above the bottom bulb, about 20 ft long and with a rough diameter of 24 in. Franki foundations can be rammed more than 60 ft into ground.

gray silt extending to -9.8; loose, coarse to fine sand with some pebbles to -21.5; and loose medium to fine brown sand to -77.5. It developed that the ash fill and silt were somewhat thicker where the Franki footings were placed.

Four footings were rammed into the ground: 20, 25, 30 and 40 ft down. Standard Franki methods were employed. A 20½-in. dia steel casing was set up over the spot, a quantity of gravel dumped inside and rammed down into the bottom to form a plug. The ram is a 7,000-lb weight dropped repeatedly from a height which forces the plug and casing into the ground—friction of the gravel inside the casing pulling the casing into the ground as the plug is forced down by blows from the heavy ram.

(Continued on page 98)





#### they're using CRUCIBLE HOLLOW DRILL RODS on the New York State Throughway

This new high-speed superhighway will, when completed, speed streams of traffic across New York State from New York City to Buffalo.

It's a big, difficult construction job on which thousands of tons of rock must be moved. That's why you will find Crucible Hollow Drill Rods in use all along the route. Experienced construction men know they can rely upon the performance of these rods under the toughest field conditions.

There is a good reason for the dependability of Crucible Hollow Drill Rods . . . they are made to tool steel standards, by the leading producer of tool and special purpose steels. And this extra quality means fewer broken rods and lost bits. For lowest cost per foot of hole drilled - specify Crucible Hollow Drill Rods.



CRUCIBLE first name in special purpose steels

54 years of Fine steelmaking

HOLLOW DRILL ROD

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA. REZISTAL STAINLESS . ALLOY . SPECIAL PURPOSE STEELS

#### HEARD THE LATEST? THE BLAW-K

EVERYTHING YOU NEED FOR ...



#### **PAVING HIGHWAYS AND AIRPORTS**

is a highly profitable operation with the Blaw-Knex "Complete Paving Package." It consists of Clamshell Buckets, Aggregate and Cement Batching Plants, Self-Aligning Road Forms, Precision Subgraders, MultiFoete Pavers, Concrete Spreader and Finishing Machines.



#### READY-MIX OPERATIONS

show greater profit with the Blaw-Knex one-source "Complete Ready-Mix Package." It includes Aggregate and Cement Batching Plants, famous Hi-Boy Trukmixers, Clamsholl and Concrete Buckets, Truck Mixer Leading Plants, Central Mixing Plants and Steel Forms.

... your only source for the "Complete Package"



#### PAVING BASE COURSE

is fast and economical with this hig of Blaw-Knox Base Pever which lays stone gravel, soil coment or crusher run aggrup to 400 tens per hour in depths up and widths up to 16'. V-type hoppe oscillating screed prevent segregation, ample traction for the softest going and of power to push your truck. Operating are low. Two sizes available to fit ever

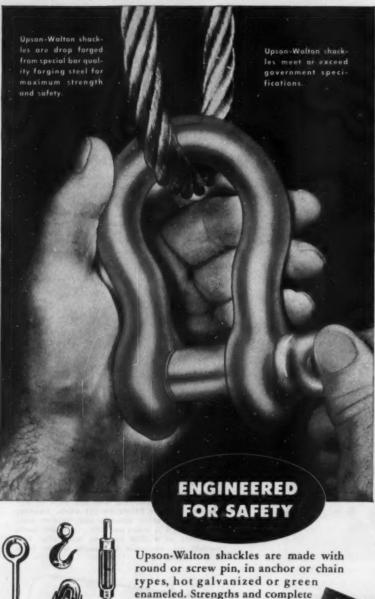


#### PROFITABLE WIDENING JOBS

cre assured with these time and labor saving Blaw-Knox Road Wideners. They handle concrete and any kind of aggregate without forms to cut costs. Speedy, efficient operation spreads and finishes concrete up to 1½ miles per day . . builds earth shoulders at a 200 ton per hour clip. Two models are available to handle widths from 2 to 10 feet.

BLAW-KNOX COMPANY BLAW-KNOX EQUIPMENT DIVISION Pittsburgh 38, Pa. Offices in Principal Cities

### **UPSON-WALTON** wire rope fittings



dimensions are shown in free catalog. Your distributor carries a wide selection for your convenience.

#### THE UPSON-WALTON COMPANY

12500 ELMWOOD AVENUE . CLEVELAND 11, OHIO

MANUFACTURERS OF WIRE ROPE . FITTINGS . TACKLE BLOCKS-ESTABLISHED 1871

#### FOOTINGS . . .

Continued from page 95

When the plug and casing have reached desired depth, the casing is anchored to the driving rig and the plug rammed out the bottom into the soil just below the casing, forming a large bottom bulb. Small quantities of almost dry concrete are rammed successively out at the bottom end of the casing (following the gravel plug)-yet constantly retaining some concrete inside the casing to prevent ground water from entering the casing.

From here on, the casing is pulled up progressively as more dry concrete is rammed down, causing a displacement caisson to grow steadily upward. As each footing neared the surface, a cage of steel reinforcing was added to the upper shaft to take care of a possible unequal application of an extremely high test load.

The 20- and 40-ft footings were tested for load-carrying capacity by New York City Building Code methods as prescribed for piles. Load per caisson was 250 tons. Gross settlement was less than one quarter of the amount allowed by the city.

#### Will Support 120 Tons

In New York load per pile is limited to 60 tons. Franki Foundation has learned by experience that its footings support more than twice this load and has proposed an amendment to permit 120 tons on its "piles."

As the plug at the bottom of a Franki casing is driven down, the surrounding soil is compacted to several times its original value. In the Coney Island sand, compaction ranged from about three times adjacent to the pier to approximately one-and-one-half times 9 ft out.

After loadbearing tests, the 20ft caisson was exhumed. It had a bottom bulb about 5 ft in diameter. Its highly compacted shaft was rough-sided, averaged about 2 ft in diameter.

Franki engineers say that maximum depths should not go beyond 65 ft for most soils because of the increasing difficulty of pulling out the steel casing as the bottom plug and shaft are developed at greater depths. Questioned about the feasibility of placing these caissons with floating equipment, they report that numerous foundations for bridge piers have been rammed down in many parts of the world -although no such job has yet been done in the U.S.



## Why waste a shovel on a job like this?

At this Lannon-stone quarry, Lannon, Wis., Minneapolis-Moline RTI Wheelers remove overburden to release expensive shovels for bigger shovel-rated jobs. Result: Wheelers match production, cut operating costs, free shovels to remove heavy stone slabs locked deep in the earth.

With its high-strength construction from radiator to drawbar, front axle conservatively rated at 5000 lbs., greater maneuverability, lower cost per weight and power, the RTI removes spoil at far less cost than would ever be possible with heavier, more expensive equipment.

This is the kind of a job where extra MM quality really pays off. Heaviest industrial-type engines, clutches and transmissions offer continuous-duty operation at full-rated power. The extra weight and rigid single unit design of MM RTI Wheeler loaders permit maximum digging and crowding performance.

If you are using big equipment where the low-cost MM Wheeler could save you money, contact your MM dealer-distributor at once. Let him show you why MM Wheelers just can't be matched for performance, for capacity, for money saved.





Whenever you compare MM Wheelers with any industrial fractor, be sure to compare the clutch. The 14" UTIL Wheeler clutch is rated at 640 torque-pounds-feet, while the engine develops 233 torque-pounds-feet at 1060 rpm. This load ratio is typical of the performance reserve you get when you buy a Wheeler.

#### MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA



Way up and way out! Rigid construction and extra weight of both 30 hp. RTI and 57 hp. UTIL Wheelers permit solid frame for greater lifting weight, longer dumping reach.



Forget tight spots. With this high-reach, sidedump-loader bucket, you can operate in closest quarters, cut maneuvering to an absolute minimum.



Complete line of loader attachments makes Wheelers pay on every job. The right attachments handle loose, bulk or palletized meterial with equal economy.

# TO MEET MOUNTING DEMAND FOR EFFECTIVE SOIL COMPACTION





These cylinder bodies are being used in early 1954 shipments of BARCO RAMMERS. All machining, assembling, and testing of Rammers is handled in Barco's new Barrington, Illinois, plant shown below.

NO RECENT TREND in construction engineering has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects — Atomic Energy, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Airports, Bridges, Buildings, and Housing Developments!

The key to high degree compaction is the BARCO RAMMER—the first choice of experienced contractors everywhere. In test after test, the Barco machine delivers 95% to 97% compaction EASILY, EFFICIENTLY, ECONOMICALLY.

To meet the demand for Rammers, Barco has steadily boosted production schedules in a new and ultramodern plant. You are assured QUICK DELIVERY in 1954. Send for latest technical bulletin on Soil Compaction and Barco Rammers. BARCO MANUFACTURING COMPANY, 512E Hough Street, Barrington, Illinois.



- ONE MAN OPERATION
- FASTER COMPACTION
- BETTER COMPACTION
- LOWER INITIAL COST
- EASY TO USE, SAFE!



NOW! QUICK DELIVERY FROM FACTORY STOCK!



Powered screed and floating machine finish . . .

#### Mastic Floor Laid in Big Warehouse

FOURTEEN ACRES of mastic flooring mixed and laid in six weeks appears to be some kind of a record. The job is reported by the Flintkote Co., whose products were used by the Cemasco Floor Co. of Chicago in a one-story warehouse for Hibbard, Spencer, Bart-

lett & Co., hardware wholesalers in Evanston, Ill.

The building is steel frame construction with brick and concrete walls, and has a flat, built-up roof. The concrete floor is a 6-in. slab built on grade. It was highly desirable to achieve a smooth, tough surface in view of the type and amount of trucking. Also, it was deemed an advantage to provide a measure of resiliency and insulation in the wearing surface for the comfort of workers who are on their feet a good share of the time.

From the standpoint of economy, a cold-laid asphaltic-type mastic wearing surface could be laid over the structural concrete floor slab without a double finishing operation. Thus, the comparison with a concrete topping was one of materials only. Final hand troweling was confined to the mastic surface, the concrete being merely screeded to line and grade.

The asphalt mastic surfacing is ½ in. thick. It serves as a shockabsorbing cushion for the concrete slab, yet it furnishes the desired resiliency and malleability to resist cracking, spalling and to heal itself of minor cuts by the ironing-out movement of traffic.

Cold-laid asphalt mastic differs from hot mastics and bituminous concrete mixtures. A stable (claytype) flooring emulsion is mixed in specified proportions with cement, sand and grit. This type of mixture undergoes a change during the hardening and curing period in which the finely dispersed asphalt particles become the binder in the second and final phase of



CEMENT, SAND AND GRIT are dumped into skip of Kwik-Mix mixer on one side as powered cart on other side receives mixed batch. Smooth working floor makes operations easier.



Failure to meet sizing specifica-

The GILSON Mechanical Testing Screen cuts out error and guesswork in meeting sizing specifications for crushed stone, gravel, slag, coal, ores, and similar materials.

A GILSON Test Report is the standard of industry. It is your guarantee that every carload, every truck-load is as-ordered.

And GILSON does the job fast—five minutes or less per complete test.

A Sand Attachment for handling 8inch sieves is optional equipment.



#### HERE'S WHY YOU WANT GILSON-

No more guesswork on sizing No more tedious screening by hand

- 1. Makes tests quickly and accurately
- 2. Two to seven separations simultaneously
- 3. Screen trays independently removable
- 4. Trays balanced to same tare weight
- 5. Visible separation to refusal
- 6. Few moving parts
- 7. Sturdy construction
- 8. Size range 4" to 200-mesh

Write now for additional information

GILSON SCREEN CO.



TWO MEN DUMP 15 gal of Flintkote Flooring Emulsion into mixer on top of cement and sand deposited by the skip on other side. Plaster mixer is thorough, creates little aeration.



ANOTHER LOAD OF MIX is deposited in front of the vibrating screed by operator on Getman Scootcrete. Cold-laid asphalt mastic is handled easily with minimum of equipment.

hardening; the cement provides initial setting and hardening.

This change accounts for the floor's resiliency or ability to absorb shock. Too, the mastic acts as an insulator in the transfer of heat and cold from the feet of workers to the concrete slab, and this is particularly important when the latter is on ground and takes its temperature from the earth subgrade.

A further factor in the selection

of this type wearing surface was proved ability to carry the heaviest types of trucking loads, ease of cleaning and ease of patching if it should become necessary.

Following broom cleaning and flushing of the concrete structural floor, a primer of Flintkote Emulsion was applied at the rate of approximately 1½ gal per 100 sq ft. Sections were laid out so that 2 to 3 days elapsed between application

(Continued on page 106)

## 9,000,000 tons of mountain go to sea in "Eucs"

Canso Causeway in Nova Scotia will join Cape Breton Island with the mainland. About 9 million tons of rock from Porcupine Mountain will form a 4,300 ft. causeway across the Strait of Canso making Cape Breton coal more accessible to the steel plants of Nova Scotia.

Northern Construction Co. and J. W. Stewart Ltd. are using a fleet of twelve 34-ton and two 22-ton Rear-Dump "Eucs" to handle this big tonnage of tough granite. Loaded by 6-cu. yd. shovels on the side of the mountain, the "Eucs" haul their loads a mile or more to the causeway on a 3 shift 'round-the-clock schedule. Euclid dependability has been an important factor in maintaining the fast pace on this huge project.

On big, tough jobs like the Canso Causeway, as well as on more routine construction and mining operations, the advanced engineering and high job availability that's built into every "Euc" pays off for owners in high production and lower costs. For information on Euclids — a complete line of equipment including Rear-Dumps, Bottom-Dumps, Loaders and Scrapers — get in touch with your nearby Euclid distributor soon.



The 34-ton "Eucs" and 6-yd. shovels make an efficient, well balanced team. Every load of rock is weighed before it is dumped on the causeway—less than full capacity loads are few and far between.

#### **EUCLID DIVISION**

GENERAL MOTORS CORPORATION

Cleveland 17, Ohio

Cable address: YUKLID .

Code: BENTLEY



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



GENERAL MOTORS

## WEAR-ARC

WEAR-ARC "Super WH"-the new electrode that combines strength, ductility, impact and abrasion resistance . . .

As a result of more than two years of research development and field tests, the Alloy Rods Company proudly announces Wear-Arc "Super WH" as a truly revolutionary electrode with superior strength and wear properties. The core wire, which is melted especially to Alloy Rods Company specifications, contains approximately 33% alloy . . . balanced in proportions never before conceived in a hard facing electrode. This entirely new alloy has a carbon content of only 0.35% but develops an equivalent hardness of alloy steels containing three times this carbon content. Those experienced in the hard facing field will recognize the advantage of a low carbon alloy in preventing spalling and flaking of the weld deposit under operating conditions requiring severe impact. With abrasion resistance up to four times over manganese steel, "Super WH", which operates on either AC or DC current, offers a new concept of values in the impact-abrasion hard facing field that will serve as a standard for the future.



VISIT US AT **BOOTHS 165-169** 



MEMORIAL AUD. BUFFALO -- MAY 5-7 (Above) Manganese steel plate welded with 14% manganese electrodes-maximum bend obtainable in free bend test.

> (Right) Manganese steel plate welded with WEAR-ARC "Super WH" electrodes-after free bend test.



WEAR-ARC "Super WH"—the new electrode that has better physical properties than any other electrode for welding manganese steel . . .

The table shows the amazing physical properties of "Super WH" as compared to heat treated manganese steel plate and the best manganese steel elec-trade that was available before the de-velopment of WEAR-ARC "Super WH".

ition of Malerial Tested Tensile Strength (psi) Yield Strength (psi) % Elongation (Free Bend) Carbon Content

Wear Resistance Factor\* Rockwell C Hardness (Average) Work Hardoned

**Weld Metal** As welded 130,000-140,000 85,000-90,000

44.0%-45.0% 0.35% vork hard 2.20 to 4.10

23.5

8.0%-15.0% 0.80% 0.86 to 0.93

18.0

47.0

**Wold Metal** 

14% Mang.

85,000-90,000

45,000-55,000

48.5

Plate 14% Mang. Heat treated 86,000-136,000

45,000-55,000 35.0%-45.0% 1.08% vork harde 1,00

16.5 40.0

## EVOLUTIONAR

### TEEL WEL

WEAR-ARC "Super WH"-the new electrode that is two electrodes in one for maximum weld strength and maximum wear resistance . . .

Now only one type of electrode is necessary for attachment welding and hard facing, "Super WH" eliminates the necessity of using stainless steel or other types of electrodes for strength welds and manganese steel electrodes for wear resistance. "Super WH" will join manganese to itself or to any other type of steel with greater strength and rigidity than stainless steel and at the same time outwear the weld deposit of any manganese steel electrode four to one. Under normal welding conditions, it is impossible to obtain cracks in the root or subsequent passes when using "Super/WH". Those who have attempted to use manganese steel electrodes for welding root passes will welcome this great electrode which also outwears any work hardening electrode ever developed.

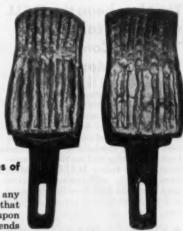


(Left) A repointer bar has been welded in place on a worn tooth and then the entire area has been resurfaced-"Super WH" electrodes were used for both operations.

(Right) These teeth were subject to the same number of hours of service in handling approximately 12,000 tons of large rock. The worn tooth on the left was welded with 14% manganese electrodes, the one on the right was welded with "Super WH" electrodes.

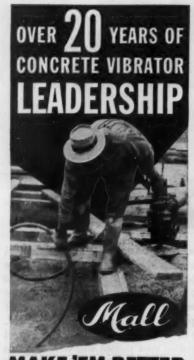
SPECIAL INTRODUCTORY OFFER... Now prove the cost-saving advantages of new WEAR-ARC "Super WH"-and do it for just \$5.90!

At this sensational low price we'll send you ten pounds of "Super WH" electrodes (in any one of the three diameters) packed in a hermetically sealed metal container-and that \$5.90 includes shipping charges anywhere in the United States. But act fast-fill in coupon below and enclose check or money order today . . . special introductory offer ends May 15, 1954. A distributes for larger quantities of the new and superior



See your Arroy Kod	a distributor for larger quantities of the new and superior with
Alloy	General Offices and Plant • York, Pennsylvania Pacific Coast Sales Offices & Plant • El Segundo, Calif.
SJSS Go	ARCALOY Stainless Steel Electrodes • BRONZE-ARC Phosphor Bronze Electrodes • NICKEL-ARC Electrodes for Cast Iron • TOOL-ARC Electrodes for Tools and Dies • WEAR-ARC Hard-Facing Electrodes WELD-ARC Low Hydrogen Electrodes
no fin	er electrodes madeanywhere

Yes, I want to take adva- special introductory offe \$5.90 for a ten pound	er. I enclose
Wear-Arc "Super WH" ing diameter: ☐ ¾", ☐	in the follow-
Name	
Company Name	
Address	
City	State



#### MAKE 'EM BETTER KEEP 'EM BETTER That has been the MALL

Objective for over 20 Years of Concrete Vibrator Manufacture

MALL pioneered in the development of concrete vibration—and over the years MALL Vibrators have earned the reputation of being good and staying good. Reason: MALL developed the best method of vibration, built the best type of machine to use it, and kept job-testing and making improvements until today MALL Vibrators have a quality, stamina and performance that gets jobs done faster, easier and better than ever before. Job-test one.

#### A VIBRATOR FOR EVERY JOB

Take your pick—gasoline engine, electric or pneumatic—a wide choice of models in many sizes to meet every job requirement. Get more facts—mail the coupon.

40 Factory-Owned Service Warehouses, Coast to Coast for Fast, Dependable Service.

	COMPANY 7784 S. Chicago Ave
Send me mor Vibrators.	e facts about Mall Concrete
Name	
Firm	
Address	
	CHI-TO



TWO MEN PULL 16-ft Master Vibrating finishing screed across steel bars laid to grade as powered screed levels and regulates the depth. Surface is 1/2 in. thick, laid on concrete.

of the primer and placing the mastic.

The mastic mixture was prepared in a Kwik-Mix bituminous mixer of 10-cu ft capacity. Each batch consisted of the following quantities (with slight variations in accordance with the aggregate grading and consistency requirements): 1 bag portland cement; 15 gal Flintkote Flooring Emulsion; 800 lb of sand and dolomite grit, the latter of 10-mesh size. The ratio of sand to stone in mixes of this kind are variable but approximate 2 parts of sand to 3 of stone. Likewise the ratio of cement to emulsion may vary from ¾ to 1 bag of cement for each 15 gal of emulsion.

The use of a plaster mixer is preferred by Cemasco, claiming that mixing is more thorough and there is less aeration of the mastic than when a revolving-type concrete mixer is used. Mixing of the mastic averages 1½ min. On this work a Getman Scootcrete was used to transport mastic from the mixer to the spreaders.

The mastic is deposited on the primed floor between screed strips spaced approximately 15 ft apart. Steel bars ½x1 in. and 12 ft long were used. These serve to regulate the thickness of mastic and provide runners for the vibrating screed. Two men pull the 16-ft Master Vibrating finishing screed which derives its power from a small gasoline engine mounted at the center.

Approximately one-half hour after screeding, power floating of the surface was begun. These machines are electrically powered and



POWER FLOATING begins 1/2 hr after screeding. Most of final finish is by machine, but hand floating was done in spots.

rotate a 24-in. steel disk over the surface. Three such floats were used, each weighing 385 lb. Final finishing was accomplished by a power-driven Master Turn-A Trowel and by hand troweling, both methods being employed at certain times. Protection from rapid drying was given when conditions required by wet burlap covering

Cemasco Floor Co. used an average of 30 men on the work: Seven on mixing and material-handling operations, eight on spreading and screeding and 15 on finishing. Melvin E. Feddler supervised the job for the contractor.

dig this powerful ditcher



PHOTO COURTESY BARBER-GREENE COMPANY, AURORA, ILLINOIS

# Chrysler power and gýrol Fluid Coupling team up to put the "run" in runabout.

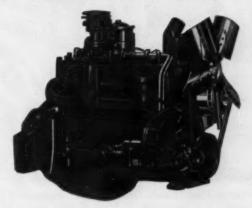
When the operator of this ditcher "lowers the boom" things happen fast. That's because the vertical boom concentrates the weight of the unit on the work, bringing additional pressure to bear on digging buckets. This, in turn, allows them to bite into practically any kind of ground formation, frozen soil or even bituminous pavement. Upon completion of digging, a simply-operated hydraulic control raises the boom and the unit takes off—automotive style—down the highway to the next job.

Behind the power and dexterity of the Barber-Greene Runabout is the Model 8 Chrysler Industrial Engine and Chrysler gýrol Fluid Coupling. This 250 cubic inch displacement engine with its wide speed range drives the bucket line, crowds the ditcher along the trench, supplies power to the hydraulic boom hoist and takes the ditcher to the next job at traffic speeds. Chrysler gýrol Fluid Coupling helps the operator coordinate crowding and bucket line speeds for maximum digging efficiency.

If your equipment requires power within our 217 to 413 cubic inch displacement range, engines that will operate equally well with gasoline, natural or L-P gas fuels, engines ideally suited to power take-off, then see a

Chrysler Industrial Engine Dealer. He can supply engines equipped at the factory for their jobs in the field.

Remember too that Chrysler Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass-production prices. If you prefer, write: Dept. 94, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.



CHRYSLER Industrial Engines



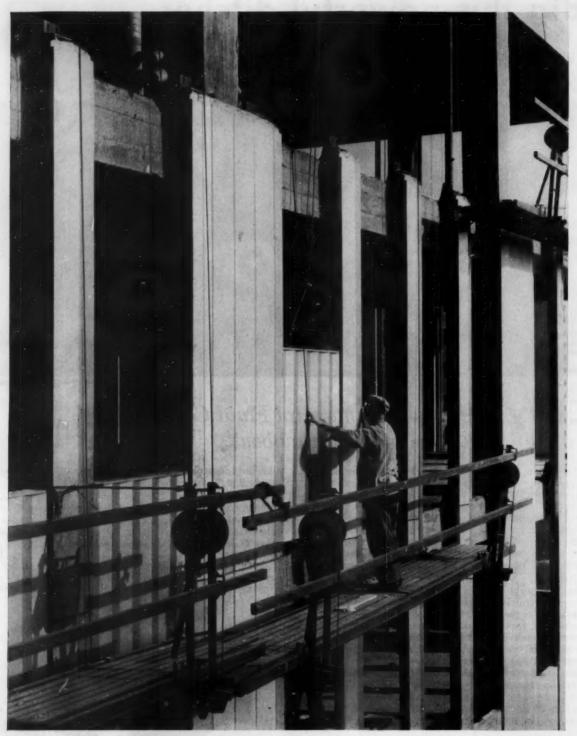








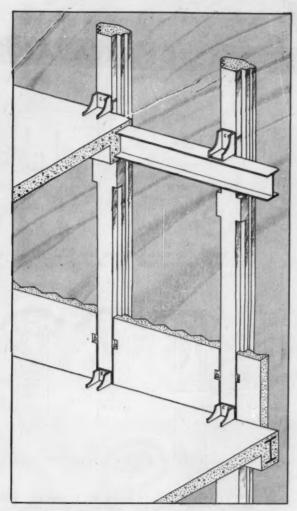
AGRICULTURE . INDUSTRY . CONSTRUCTION . OIL FIELDS



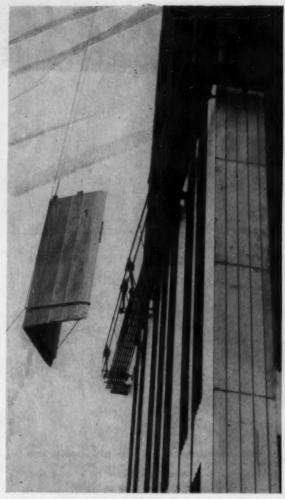
SPANDREL LOWERS easily between mullions. It measures 3 ft 10 Note steel angles with elongated holes on beam above, placed to

In. by 5 ft 7 in. and is only 41/2 in. thick; weighs about 1,000 lb. receive prefabricated mullions and pier for next floor.

# **Light Panels Cover Buildings Rapidly**



MULLIONS ARE SUPPORTED and fied into steel frame by brackets through which bolts are passed and threaded into insert nuts cast into mullion. Spandrels, in turn, bolt to mullions.



HEAVY L-SHAPED CORNER PIER is hoisted into position by derrick on roof. These big units, also prefabricated, are a full story in height and bolted into place with little difficulty.

PREFABRICATED PERIMETER walls of lightweight design were placed quickly around the three multistory office buildings that have become the initial structures on the modern Gateway Center site in Pittsburgh

The basic idea was to apply a stainless steel face to the buildings, backed with the masonry and reinforcing necessary to make it a true curtain wall to meet building codes. Prefabrication of panels under controlled conditions provided the answer.

Gateway Center curtain walls were made of stainless steel strips, 24 in. or less in width, 0.031 in. thick, bent to required shapes—with all edges turned inward. Panel facings in various sizes were made up by joining the required number of strips with spot

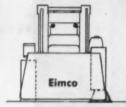
Behind the stainless facing is a 1-in. layer of porous concrete made of %-in. aggregate bonded with cement. This is a "breather bed," non-absorbent and porous, so that any water collecting will seep through and drain out the bottom of each panel at floor level.

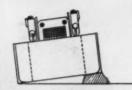
Behind the breather course is structural concrete made of Perlite reinforced with 4-in. mesh wire and (Continued on page 112)



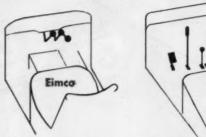
INSIDE VIEW OF SPANDRELS shows how they are bolted to mullions and piers. All members fitted well, slid easily into place. Exposed bolts and brackets get covering of fireproofing cement.



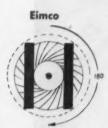


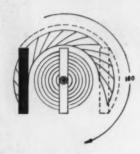


OSCILLATION — with loader attachment — exclusive on Eimco 105, this feature permits better loading on uneven floors in pits or stripping operations.

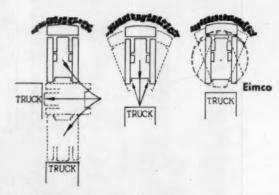


EASY SIMPLE CONTROLS — Eimco's easy finger tip controls give better maneuverability with less effort. Change speeds without stopping — instant reverse.

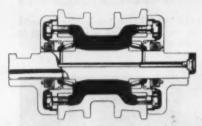




INDEPENDENT TRACK OPERATION — In a turn one track runs forward, the other reverse, cutting turning radius to a minimum. Eliminates excessive wear on track, rollers, idlers and track frame. On most machines one side is locked and skidded for a sharp turn.



MANEUVERABILITY — Faster loading into haulage units because of Eimco's overhead loading action and independently controlled tracks. Note trucks can be kept closer, cutting haulage time.



THE EIMCO 105 TRACK ROLLER — A one piece cast alloy steel roller with bearing cages and husky shaft on Timken roller bearings completely sealed against dirt and moisture. Careful heat treatment prolongs life and maximum grease capacity assures lubrication.



BETTER VISIBILITY — The operator sits up front where he can see. Loading, buildozing or pushing are more efficient, eliminate guesswork.

Every feature of the Eimco 105 is designed for maximum customer service with minimum maintenance. One of these features is the full oscillating track EVEN WITH THE LOADER ATTACHMENT. This is an exclusive feature on the Eimco 105 since standard practice in the construction field is to tie the tracks rigidly when a loader is mounted on any tractor unit.

The full oscillating feature prevents excessive frame twist, wear on tracks, rollers, and idlers. Traveling on uneven ground the heavy equal-

izer bar supports the front end of the tractor and rides freely in its universal type socket in each track roller frame so that either track is free to move up or down without tilting the engine or frame.

This feature provides maximum ground contact under all conditions and maximum drive which is essential in good digging and loading.

Write for information to The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.



Above left: Eimco 105 digs in stock pile of chunky limestone. Above right: Two speed bucket mechanism loads light trucks easily and fills big trucks full. Below left: Loading rock from pit. Bottom: Clearing slide area after heavy rain. Below right: High discharge loads into high railroad cars.



# New design doubles life of



There are two reasons for the spectacular record of Kensington crawler tracks wherever they have been tested . . . (1) improved design, and (2) superior wear-resisting alloyed manganese steel.

First... Kensington engineers have designed a one-piece rail that ends the twisting and weaving which contributes to so much wear in ordinary tracks. Further rigidity and near-perfect alignment is gained by use of heat-treated alloy pins pressed tightly in place under high pressure. Grousers are heavied-up at all vulnerable parts to resist bending and breaking.

Yet, despite these important design changes, Kensington rails and grousers are interchangeable with the original parts furnished with your tractor.

Second...the hard, Kensington-developed alloyed manganese steels actually fight back against wear. They constantly develop extra surface hardness when exposed to friction, abrasion and impact.

KENSINGTON tracks arrive from the factory ready-assembled.

Learn for yourself how Kensington tracks will lower your crawler maintenance costs and improve your operating efficiency. Coupon will bring details.



KENSINGTON STEEL CO.

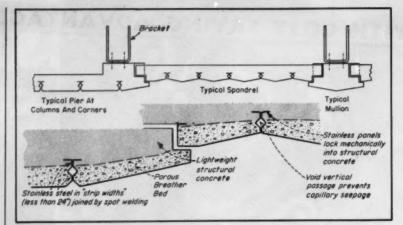
Dept. F, 505 Kensingten Ave., Chicage 28, Ill.

Please send information on crawler tracks for tracter described below. I understand i will be under no obligation.

Make of tractor.

STATE

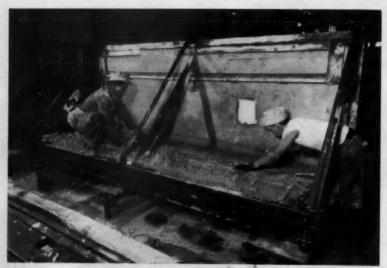
Model	per belt
Width of grouser	
NAME	
COMPANY	
ADDRESS.	
	-



EXTERIOR SKIN of stainless steel is shaped on a brake, edges turned in and welded. Sketch show how skin, breather bed and lightweight structural concrete become integral panel.



FACE DOWN spandrel is being cast flat. Light-colored strips are edges of stainless facing. Porous mix is in; wire mesh, steel rods, fittings and Perlite concrete come next.



CORNER PIER CONCRETE is finished off. Panels remain in forms for 24 hr, are then removed for further curing. Diagonal braces remain on pier until it is placed on building.

1/4 x 5%-in. rods. Insert nuts, connecting plates and lifting hook attachments are welded to the reinforcing and cast into the Perlite.

The stainless facing is held to the panel by the edges bent away from the face when fabricated and embedded in the backup concrete.

The stainless facing affords exterior protection and a decorative value. The backup material adds structural value, keeps panels rigid. Panels were made in five basic units: Story-high piers in two widths front the structural columns; L-shaped piers cover building corners; narrow mullions separate the windows; and spandrels, measuring 3 ft 10 in. by 5 ft 7 in., are set between mullions.

Spandrels are 4½ in. thick; pier facings and mullions vary between 5¾ and 7¾ in. thick. Mullions and spandrels weigh about 1,000 lb, piers 2,500 lb and corner piers less than 3 tons. Over-all weight for the wall is 42½ psf. Panels were cast by the Cementstone Co., Mc-Kees Rock, Pa., and delivered in palletized lots for easy handling. Stainless facings were fabricated by United Steel Fabricators, Inc., Wooster, Ohio.

#### **Construction Procedure**

Erection of the panels proceeded at the rate of one story daily after installation crew had practice.

Lighter panels (spandrels and mullions) were lifted to a floor in advance of assembly and stored there. At the start of a day's work, the heavy piers were lifted directly into place from the ground by four stiffleg derricks, one located on each wing of the roof.

As piers were placed, other crews got mullions from the floor and hoisted them into position with small pony derricks.

Piers and mullions were bolted to U-shaped brackets welded to the spandrel beams. Bolt holes in the brackets were elongated to allow for vertical adjustment. Spandrels were bolted to piers and mullions. In eyery case, bolts were turned into insert nuts in the panels and secured with tack welds.

Construction-wise, the developer of Gateway Center, Equitable Life Assurance Society, has reaped a dividend in faster handling and erection of curtain walls, and the reduced weight made it possible to put down lighter footings and use lighter structural framing.

Andrew J. Eken supervised the construction for the contractor, Starrett Brothers & Eken, Inc., Pittsburgh.



It takes precision power to handle a heavy, delicate job like this.
That means Waukesha power!

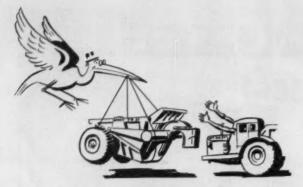
These two 45-ton MC-824 Lorain Moto-Cranes, owned by the City of Los Angeles, Dept. of Water & Power, moved three 62-ton AC transformers to a new sub-station near the Northrop Aviation Plant. These giant transformers were removed from cramped locations and placed in the midst of crowded high voltage equipment... an operation requiring precision power and perfect co-ordination between the two rigs, each equipped with a 50-foot boom.

The power that handled this job so smoothly, and without a hitch,

was furnished by Waukesha Model WAKD Diesel engines, powering both the turntables and the carriers. For detailed information on the many advanced design and construction features of this Waukesha Diesel, send for Bulletin 1415.

6-WAKD WAUKESHA Super Duty Diesel, 6-cyl. 61/4-in. bore x 61/2-in. stroke, 1197 cubic inch displacement.

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.



# Athey Has a New Baby ... A Big One

An Equipment Development Report By RALPH H. LEWIS, Associate Editor



EVEN WITH a capacity load of 27 heaped cu yd, the new Athey PR21 rock and dirt wagon matched to the Caterpillar DW21 two-wheel tractor, does not appear to have full load.



THREE-STAGE HYDRAULIC HOISTS push the body up to 60 deg which enables the operator to dump a load cleanly in 23 sec. The trailer wheels can be locked for faster dumps.

IT'S LONG BEEN RUMORED a number of manufacturers have been planning, or actually constructing a two-wheel, end-dump rock and dirt wagon to complement the Cat DW21, two-wheel rubbertired tractor, but Athey Products Corp., Chicago, Ill., has taken it out of the rumor stage by emerging with the first such unit actually built, tested, and being offered for sale—and it looks like a dandy rig.

Athey has named its new baby the PR21—the PR designates "pneumatic rear" for use with the Cat DW21—the 275-hp (peak) rubber-tired, two-wheel tractor.

We made a trip out to Chicago to see the pilot model actually working in the gravel pits of the Consumer Co. on Route 66. We watched it perform, under unfavorable conditions, and we came away convinced that Ben Lease, president of Athey, has come up with a unit that should find immediate acceptance in the field—particularly since it can be used with DW21s already on the job with very little modifications.

The PR21 can be used with any standard DW21 with one alteration—a new pump of 55 gpm must be installed to supply the hydraulic power to the Athey hoists.

#### An \$18,000 Wagon

Another favorable attraction for the acceptance of this rig is the price. The PR21 can be purchased alone for a flat \$18,000 fob Chicago. If you need the Cat DW21 and the PR21, write a check for \$40,641.00 and the rigs are yours, ready to go to work.

The day we picked to see the unit work was a typical demonstration day. It was cold and early in the morning, a light snow had fallen which made the going extremely slippery. The conditions didn't seem to affect the performance of the DW21 and PR21, however, as we watched the units take a full

(Continued on page 116)

Garden State Road Materials, Inc.



"HAVEN'T BURNED A BEARING SINCE USING C-800," says "Doc" Dougherty. "We have saved a lot of money on engine life with C-800."



FEEDING ROAD OIL TO "SPREADER": In addition to C-800 motor oil, Garden State uses only Cities Service road oil.



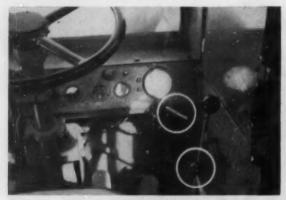
"HIGHLY RECOMMEND CITIES SERVICE TO ANY FLEET OPERATOR," says Dougherty, after 30 years' maintenance experience with buses, trucks and construction equipment.

# ANOTHER ROAD NEARS COMPLETION

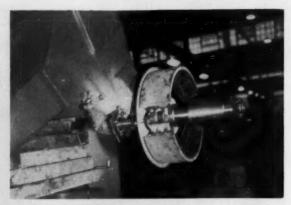
Pictured above is a "spreader"—one of the 25 pieces of heavy road equipment constantly in use for the Garden State Road Materials, Inc., Cedar Grove, New Jersey. Although these trucks operate throughout four states, often under the severest conditions, William "Doc" Dougherty, president of the firm, reports that since using C-800 motor oil—"The rings do not stick, there is no sludge or varnish and we use less oil. C-800 motor oil is the best I have ever used."

Learn how you can increase the performance of your trucks with C-800 heavy duty motor oil. For details, contact your nearest Cities Service Office or write Cities Service Oil Company, Sixty Wall Tower, New York City 5, New York.





CONTROLS ARE HANDY. The upper circled brake lever controls all wheels for stop and dumps. The bottom one is the hydraulic control.



BRAKING AREA on the DW21 and PR21 is emple. Each wheel has 22 in. die and 7 in. width braking surface.



BRAKE MECHANISM is designed for independent braking of both the DW21 and PR21 wheels. The brakes are operated by air.



THIS 55-GPM HOIST hydraulic system for the operation of the trailer must be added in order to use the standard DW21 tractor.



# No matter how you figure scaffolding... ADVANCE PAYS OFF!

When it comes to building construction and maintenance work, any tool that can cut labor costs and speed job completions means more profit for the user. That's why we invite your inspection of ADVANCE tubular steel scaffold. It goes up quicker . . . stays up more firmly . . . dismantles far easier than makeshift wood or outmoded metal scaffold.

#### Here's the reason!

The erection of ADVANCE scaffold panels is quickly accomplished by means of the patented Cam Locking brace. You merely hold the cam lever at the end of the brace in a horizontal position and slide into the panel socket. Then, turn the cam lever down into locking position. That's all! No tools are needed . . . no damaged threads to repair . . . no bolts, nuts or clamps to replace.

It will more than pay you to scaffold with ADVANCE.

Ask the man who uses it!

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MATHEWS CONVEYER CO. WEST COAST

load and pull it up an 18% grade in low gear. On another section of the haul road, it took the same load up a 9% grade in second and third gear. There was no evidence of any slippage on the tires and the DW21 did not appear to have more than it could handle.

One thing we did notice about the rig, however—and we called it to the attention of Chief Engineer Robert W. Kling—was that, even when loaded to its full capacity of 27 heaped yd (1:1 slope) there was no indication of spillage. According to Kling, the PR21 was designed purposely so the load could be crowned, but still would not overflow to leave spillage around the shovel or on the haul road.

When Athey started to think about building the PR21, the primary considerations in the design were stability, economy, maneuverability, weight distribution, ease of handling, hydraulic dumping, and appearance. Now that it is built and operating in the field, it appears they reached the goals they set out for.

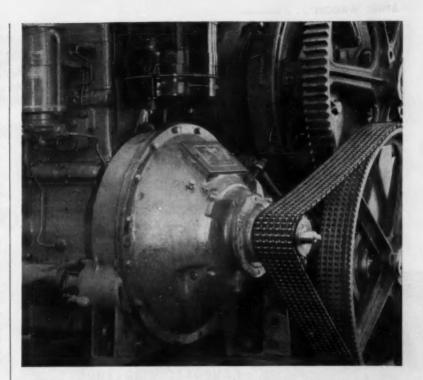
#### All-Welded Job

From an appearance standpoint, the Athey PR21, together with the DW21, is probably the cleanest looking product Athey has ever turned out. The lines of the unit have been kept relatively simple with the main emphasis on the contour of the body. It's free from all discharge restrictions and is nice and wide so it can easily be spotted and loaded. It's entirely of welded construction, using %-in. high tensile steel to get maximum strength with minimum weight-33,000 lb. The axle member is of structural steel with stub axles bolted into place. Body bottom is double-plated, with 34-in. hightensile steel top plate, heavy oakplank filler for shock and a 1/2-in. lower plate.

Drawbar and draft connections are of one-piece welded steel members, including 1-in. drawbar bottom plate, 34-in. top plate and 5%-in. side plates.

Over-all length of the trailer is 22 ft 2½ in., and the combined length of tractor and trailer is 33 ft 4 in. It is 12 ft 8¾ in. wide and 11 ft 4 in. high. Loading height will average about 9 ft 5 in. The extreme top of the dumping angle of the body reaches to 19 ft 1 in.

Large, single tires, 24:00x29, 36-ply rock-grip tread, which are interchangeable with the tractor and No. 21 scraper, give good flotation and provide extra stability. This



# Why Leading Engine Manufacturers STANDARDIZE ON TWIN DISC Power Take-Offs

Next time you're watching powered equipment driving through a friction power take-off, check the name plate on the drive back of the engine. In all probability, you'll see a Twin Disc Power Take-Off, putting more borse-power to work. With their simple, rugged design—single-point adjustment—and slippage capacity far in excess of horsepower rating, Twin Disc Power Take-Offs are selected as standard equipment by most of the nation's leading industrial engine manufacturers.

That's why you'll find Twin Disc Power Take-Offs on such leading industrial engines as Ajax - Buda - Caterpillar - Climax - Continental - Cummins-Hercules-International-LeRoi
- Minneapolis-Moline - Murphy - Superior - Waukesha - White - Wisconsin . . . for these manufacturers know
they can depend on Twin Disc performance . . . and they know, too, that
wherever their engines may be ultimately working, Twin Disc Service
will only be a matter of hours . . .
backed by 60 Parts Stations and 8 Factory Branches or Sales Eng. Offices.

Twin Disc Power Take-Offs are available with clutches ranging from 6.5" to 24" single-plate; from 11.5" to 24" double-plate. Housing sizes No. 6 SAE to No. 00 SAE. Capacities up to 600 hp. Write for Bulletin No. 129-C.





THIS PHOTOGRAPH illustrates the short turning radius possible. With the body up, its radius is only 13 ft 5 in. Body down, it will get around in 16 ft 9 in.

interchangeability of tires should be well received by contractors who are Caterpillar fleet owners.

Brakes are ample with 22 in. dia and 7 in. width on braking area on each wheel. They are air-operated from tractor brake controls. An arrangement has been worked out so it is possible to lock the trailer wheels, but not the tractor; or the tractor wheels, but not the trailer. This is helpful when dumping. For example, by locking the trailer wheel brake when dumping over the edge, the tractor continues to move back during the ejection of the load, shortening the wheelbase as much as 6½ ft.

In any two-wheel tractor-trailer combination, one of the big factors is stability. Athey has provided good stability in the PR21 by using an exceptionally wide tread of 123 in. on the rear wheels. This feature, together with the short wheelbase of 19 ft 11% in., the low center of gravity incorporated into the design, results in a finished product that gives stability comparable to that obtained in a four-wheel rigid frame hauling unit and at the same time retains the flexibility so desirable in a tractor-trailer combination.

#### Makes Right-Angle Turns

The DW21-PR21 combination has good maneuverability. The 90deg turning angle of the tractor permits right angle turns from a standstill. The unit can be turned with body in up-position. This, coupled with the short wheelbase, gives a highly maneuverable unit which should make easy work of cuts and fills that even conventional trucks or rigid frame units find pretty tough. The standard features incorporated into the DW21 such as power steering, power brakes, air-booster clutches help make the operator's day a little shorter.

The unit is dumped hydraulically by a pair of double-acting telescopic cylinders in the draft frame assembly. These three-stage hoists tilt the trailer 60 deg in 23 sec to give quick and clean dumps. The body is snubbed by a safety cable to prevent the shock loads of dumping from being carried into the hydraulic cylinders. The hydraulic package is supplied by Athey and is mounted on the rear of the tractor transmission driven by the rear power take-off of the DW21.

Engineer Kling has incorporated (Continued on page 122)



Maginniss

POWER TOOL CO.

Mansfield Ohio



## you get More use per dollar at no higher cost

Now, an amazing new conveyor belt cover compound developed by Raybestos-Manhattan provides phenomenal resistance to wear and tear. Most conveyor belt failures start with wear of the cover. "XDC" Cover greatly extends the life of R/M Conveyor Belts by giving protection never before attained against wear, abrasion, cuts and tears which lead to costly internal damage. The new "XDC" Cover greatly increases the benefits of Raybestos-Manhattan's other

outstanding developments in conveyor belt design... Constructions like extra flexible RAY-MAN "F," extra-cushioned HOMO-CORD, HOMOFLEX and extra-high tension RAY-MAN. This major advance in rubber engineering puts longer life, "More Use per Dollar" into tough, dependable R/M Conveyor Belts. When you are thinking about conveyor belts, call an R/M representative.



MANHATTAN RUBBER DIVISION - PASSAIC, NEW JERSEY

#### RAYBESTOS - MANHATTAN, INC.















Other R/M products include: Industrial Rubber \* Fan Belts \* Radiator Hose \* Brake Linings \* Brake Blacks \* Clutch Facings

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# We tie truck axles in

in the new Timken-Detroit indoor proving ground...and only

We twist, shock-load, abuse, and torture them. Match every conceivable hauling condition. Then add a few brutal tricks of our own!

**Why?** So you'll know in advance, and for sure, that a Timken-Detroit axle can take the punishment it was designed for. More rugged, grueling punishment than any other axle made!

To prove it, we capsuled a multi-thousand acre proving ground into one room. Here our engineers can put 50 years of experience in building axles for trucks, buses and trailers to work—subjecting axles and gearing *indoors*, to any *outdoor* operating condition.

Such exacting research pays off for you in: longer axle life; less maintenance, repairs and downtime; reduced operating expenses. This is why Timken-Detroit axles are preferred by manufacturers and operators everywhere.





#### How TDA proves axle quality in this "Torture Chamber"

We pick one of our axles at random ... then duplicate a hauling condition, hour after hour, day after day ... simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going up hill with a full load from California to New York nonstop. There is no other axle testing like it in the world!

This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses...soft ground at full load...mountains...express highways or side roads. With special dials, recorders and electronic devices, he actually drives the axle with scientific accuracy from his chair!



Soft ground? Heavy load—all up-grade? That's a tremendous strain on an axle. But it's nothing compared to what we do in the indoor proving ground! For instancewe take an axle shaft and twist it 14° forward and backward, 36 times a minute, 24 hours a day, week after week. And that's only one test to give you low-cost performance, long axle life regardless of your hauling conditions.



Hauling wet mix? You need Timken-Detroit axlesduplicates of axles that have been given the "works" in our indoor testing laboratory. Simulating the punishment the axle would get hitting a chuck hole with a capacity load every 4 seconds, 24 hours a day, month after month! And it's all done to save you money on maintenance and repairs-make you more money every load.

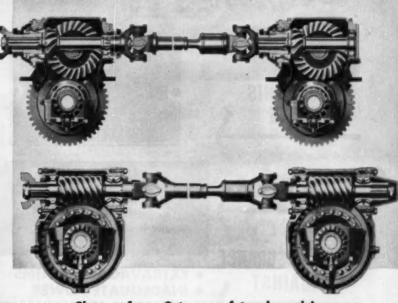
# knots

Timken has it!



"TORTURE-TESTED" to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS



Choose from 2 types of tandem drive rear axle units for "Million Mile" performance

- reduction final drive. First reduction is hypoid gear and pinion-second is helical spur-gearing. Hypoid gearing, developed for heavy-duty trucks by Timken-Detroit, assures outstanding performance and low maintenance costs for operators everywhere. Large pinions, greater tooth contact give TDA hypoid-helical gearing the ability to stand the gaff" of extreme shock loads and hard, grueling hauling service.
- 1. Top-mounted hypoid-helical double- 2. Famous patented FJ worm gearing, pioneered by Timken-Detroit. Through Drive" type . . . direct transmittal of engine torque through forward driving axle to rear driving axle. Permanently silent . . . simple, sturdy . . . stands extreme shockloads without damage. Large diameter worm and worm wheel . . . increased capacity roller bearings . easy lubrication . . . light weight make FJ highly desirable for high speed service on any kind of grades.

Plants at: Detroit, Michigan

Oshkosh, Wisconsin . Utica, New York . Ashtabula, Kenton and Newark, Ohio . New Castle, Pennsylvania



THE CAT-ATHEY UNIT seen rising to its 60-deg, dumping angle and in the foreground is an actual load handled by the rig. Note the big rocks.

BARNES MANUFACTURING CO. Mansfield, Obio

C. H. & E. MANUFACTURING CO. Milwaukee, Wisconsin

CARVER PUMP CO. Muscatine, Iowa

CHAIN BUT COMPANY Milwaukee, Wisconsin

CONSTRUCTION MACHINERY CO. Waterloo, Iowa

ESSICE MANUFACTURING CO. Los Angeles, California

THE GORMAN-RUPP CO. Manafield, Ohio THE JAEGER MACHINE CO. Columbus, Ohio

LEYMAN MANUFACTURING CORP.

MARLOW PUMPS Ridgewood, New Jersey

FOOD MACHINERY AND CHEMICAL CORPORATION Peerless Pump Division Los Angeles, California

Belgium, Wisconsin

STERLING MACHINERY CORP. Los Angeles. California

WORTHINGTON CORPORATION Concrete Machinery Division Plainfield, New Jersey

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excellent weight distribution into the DW21-PR21 combination. The shape of the body and the compactness of the draft connection permit a distribution of weight which, according to many engineers, had been impossible in four-wheel tractor-drawn continuous frame trailer units. The Athey unit, empty, puts 65% of the weight on the drivers and 35% on the trailer. Loaded, it is 47% on the drivers and 53% on the trailer tires. This provides excellent traction features, notwithstanding the fact it gives almost perfect weight distribution.

Athey spent a lot of time and money developing this unit, and the final results show this rig will be "in the money" when contractors find they need such an outfit to help them get better production.

Certainly, Ben Lease is confident the PR21 is right both in quality and for acceptance in the field. He's



GOOD STABILITY in the PR21 is provided by a low center of gravity and an exceptionally wide tread of 123 in. on the rear wheels.

gone into production to turn out an even 100 such units this year, and he expects to sell every one of them.

"Handling loose materials," according to Mr. Lease, "is the biggest single problem we have today. With any material you first loosen it, next pick it up and load it, then transport it, and finally dump or spread it. The economics are simple. Somebody has to have a rig that will haul this material, more at a time, but still economically and we think with the DW21 and PR21 we have the right tool to handle this business."

Athey's bread-and-butter business has long been building tracktype tracks for wagons, hauling units, etc., so the rubber-tired end of the business is relatively new

(Continued on page 124)

## THE ENGINEER'S REPORT

UNIT Transmission Gears

UNIT Transmission Gears

CONDITIONS in Mud, Sand, water, dust

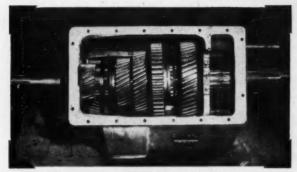
PERIOD 1960 hours

FIRM Thos. Scalzo Co., Scattle Wash.

## Transmission gears "like new" after 1960 hours' work!

USING RPM GEAR LUBRICANT exclusively in all gear cases, five Tournapulls owned by the Thos. Scalzo Co., Seattle, have worked year round in sand, mud, water and dust-severe conditions even for heavy equipment. Yet, when the transmission below was removed for inspection after 1960 hours, the unit showed almost no wear and was put back in service. Gears in the other four machines had gone 2500 hours and were still working perfectly. The company uses over 35 pieces of equipment in construction work in the Pacific Northwest.





"WE'VE HAD NO GEAR TROUBLE OF ANY KIND," reports Owner Joe Scalzo. "RPM Gear Lubricant is used in all our transmissions, differentials, and final drives. It saves us money by keeping them on the job." Note lack of wear on gear teeth in photo above.

REMARKS: Because RPM Gear Lubricant has very high

oiliness qualities and stability, it is especially valuable for the lubrication of all conventional gears. It is also recommended for bronze worm gears. (For hypoids of all kinds, RPM Multi-Service Gear Lubricant is recommended.)



The same of the sa

A. Made from paraffine stocks with special compounds that help provide a tough film —gives extra tooth protection, with stands shock and overloads.

How RPM Gear Lubricant prevents wear in conventional and worm gears

B. Has high resistance to oxidation resists deposit formation, assures lubrication in high temperatures.

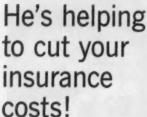
C. Contains foam inhibitor—prevents expansion and high gear-case pressures.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado



What is this man doing?





You know how accidents affect your insurance rate. Fewer accidents, lower cost. Fifty percent of all accidents are preventable. And safety messages that get read — says the National Safety Council — do help reduce accidents. So...

Use AJAX Cups to put your safety messages in your worker's hand—where he'll see them several times a day, when he's relaxed, receptive, ready to read. (And he'll appreciate the comfort, convenience and

complete sanitation of these crisp, clean, easy-to-drink-from AJAX Cups, too.)

AJAX® Cups and AJAX Drinking Water Tanks deliver fresh cool water to workers—mean less time lost on the job. AJAX Cups and dispensers are also ideal for stationary tanks, barrels, pipeline faucets. 4 oz., 6 oz and 7 oz. sizes packed imprinted with assorted stock safety messages—or your own message to order.





GET THE PULL STORY—Write us today for this new folder which gives full details on imprinted AJAX Cups and equipment.

#### A TYPICAL EXAMPLE

(Actual case history from insurance company files)

Contractor A paid a first year premium of \$22,600. His second year he paid \$12,748—a reduction of \$9,852. \$3,700 of this saving was due to a difference in manual rate—determined by payroll, type of jobs done, etc. But he saved an additional \$6,152, because an active accident prevention program earned him a substantial credit on his second year premium.



**United States Envelope Company** 

Oeneral Offices: • Springfield 2, Mass.

15 DIVISIONS FROM COAST TO COAST

Page 124 — Construction METHODS and Equipment — April 1954

#### ATHEY WAGON .

Continued from page 122

to them. However, they have been successful with rubber-tired, force-feed loaders, the PD20, a side-dump rock wagon for use with the Cat DW20 and PD10 wagons for use with Cat DW10s.

Athey believes there will be a place for both the track-type and rubber-tired hauling units, so they are looking to the future in building both types.

#### **Specifications**

Over-all length, trailer	. 22	ft	21/2 in.
Length, tractor and trailer.	. 33	ft	4 in.
Width	12	ft	83/4 in.
Height	11	ft	4 in.
Height, top of body at			
extreme dumping angle	19	ft	1 in.
Tread	.12	3 i	n.
Tires are 24:00x29-36-ply			
rock grip tread			
Wheelbase, haul position			
dump position			
Turning radius-Body up	13	ft	5 in.
Body down	16	ft	9 in.
Width required for non-stop			
turn	34	ft	
Ground clearance, under			
body	. 21	in.	
Body-Length, inside	.14	ft	1 in.
Width, inside at top	.10	ft	0 in.
Loading height-Side (average	je)		
	9	ft	5 in.
Rear	6	ft	1/2 in.
Discharge height			
(body at maximum dump			
angle)	.12	in.	
Overhang of body discharge			
behind tire (dump position)		in.	
Weights, (approx) Ib			
Trailer	33,0	000	
Trailer, packed for export	34,0	000	
Tractor, with starting	-		
controls	24,	250	
Cubic measurement (for export			
Trailer	1,1	385	

#### Real Cool!

TO PREVENT INFILTRATION of sand into a perforated drill point used to inject soil - stabilizing chemicals, try freezing it with dry ice. Soil Testing Services, Inc., Chicago, says to put the injection section of drill rod into a casing and surround it with crushed dry ice. When casing is frosted, pour water into drill rod. When frozen, rod is removed and driven. Warm water will melt the ice in the point, and the chemical can be injected.



Wire Rope at Work—Here's a load that required deft manipulation by three cranes working as a team. The absorption tower being guided into place was 98 ft long, 11 ft in diameter, and weighed more than 33 tons.

For the lifting and placing of this big, cumbersome load, the cranes were rigged with Bethlehem wire rope, Purple Strand grade, in the 6 x 25 construction; sizes, %-in. and %-in. A typical assignment for Bethlehem rope, which so capably handles the toughest lifting and hauling jobs in every kind of industry.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING 35

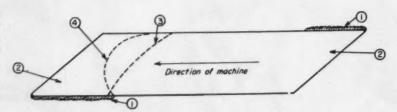
## Increase Blade Life, Use Less Power

By J. D. NEWKIRK, Shunk Manufacturing Co.

MOST ABUSED PART of any earthmoving equipment probably is the cutting edge, or blade. Blades are subjected to constant abrasive wear, shock and other detrimental factors, and it's surprising that they hold up and last as long as they do. A little study shows what it takes to manufacture them and their proper use and maintenance to give them long life.

A blade can only be a good blade if it meets the steel specifications and standards adopted by the majority of state highway departments. If the manufacturer adheres to these specifications, the user can be certain of uniform composition in the blade which assures maximum life under a wide variety of operating conditions.

The manufacturer can take advantage of recent developments in alloy steels and make a better blade, with longer life and at less cost than by using ordinary carbon



steel. For example, an alloy steel developed for bulldozer cutting edges has been recently developed that provides exceptionally high wear resistance and resistance to breakage.

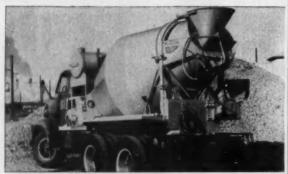
#### Hardfacing

Hardfacing or hard-surfacing is sometimes warranted on bulldozer blades and scraper blades where extreme abrasive material is encountered. This should be applied vertically and in a manner whereby heat application is properly disseminated at the time of application. It is intended to accomplish two purposes, depending on the application: (1) Increase efficiency; (2) Permit faster loading of the scraper with less horsepower throughout the life of the blade.

The sketch above shows a crosssection of a typical scraper cutting edge. Hard surfacing is sometimes applied to the surfaces (1) for the purpose of keeping the blade sharp. Surface (2), not being hard surfaced, has a softer surface than surface (1) and as the cutting edge moves through abrasive material

(Continued on page 129)

# IN 3 TO 6 YARD CAPACITIES



CMC's Transcrete — the simplest truck mixer of all — features the famous "Thoro-Mix" action that charges, mixes, and discharges all slumps faster.

Large drum diameter, deep "L" section blades and a progressively increasing blade slope are drum design features that make for more thorough mixing, more positive discharge, and a greater ability to handle stiff, low slump mixes.

Transcrete's time saving efficiency means more trips per day as mixer or agitator.

Quality construction and simplified rugged design assure trouble-free life.

Transcrete offers you the choice of a profit making size at

#### TRANSCRETE AVAILABLE CMC OFFERS LARGE VARIETY OF BATCHING EQUIPMENT



CMC's Multiplex Bins fill a long apparent need for a more compact, lowerin-height bin for central plants and many other installations.

They are available in unit construction 16' square - 2, 3 or 4 compartment, 110 or 165 ton, with or without 125 or 175 bbl. center cement compartment, elevator or conveyor.

Interchangeable legs and braces make ground assembly quick, easy. They can be erected in just a fraction of the time usually required.

Batchers are available in 1, 2, 3, 4 or 6 yard sizes with or without cement compartment.



#### Other Outstanding **Batching Equipment**

CMC also has Bin Batchers for smaller jobs; cement bins, cement batchers, manual or automatic; automatic water weighers; conveyors and elevators to fit into your present plant.

SOLD & SERVICED BY AMERICA'S BEST DISTRIBUTORS

CONSTRUCTION MACHINERY COMPANIES . . . . . . . WATERLOO, IOWA



Whiteman Power Buggies roll right under truck-mixer chute to receive their loads.



Concrete is poured directly into Power Buggies which handle capacity loads every trip.



Power Buggles speed ever portable timber ramps at 16 mph, never get tired.



Concrete is poured quickly, accurately with dumping mechanism under positive control at all times.

# Whiteman

POWER BUGGIES

YARD-A-MINUTE DACE

NEW YORK PIER JOS

Pouring the 100,000 sq. ft, reserve deck of New York City's Pier 57 was done in record time with four Whiteman Power Buggles. The salver trucks railed right up to the edge of the pier and chuted the concrete directly into the Power Buggles which speed across portable timber runways at 15 mph to pour their loads quickly and accurately. Finishing operations were handled by Whiteman Floatings Finishing Machines.

According to the contractors, ""complete mechanization of concrete pouring and finishing greatly expedited the job and held costs to a minimum." Whiteman equipment can save time and money for you, for, Send cospon now for details.

\*Merritt-Chapman & Scott Corp. and Corbetta Construction Co., jaint-venture contractors. Whiteman squipment furnished by Costractors Sporty Com.

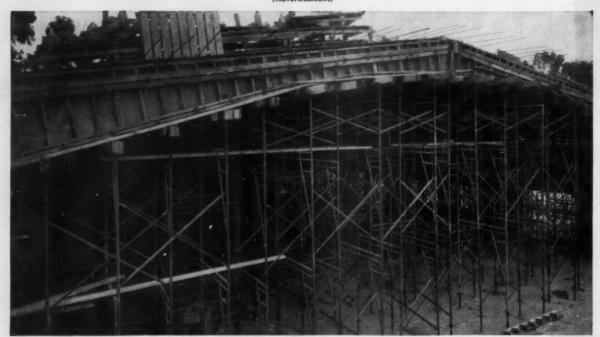
Whiteman

SCREEDIM MACMINI

City\_

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of
distributor for Screeding Machines.
Power Suggy | Floating Finishing
Machines.
Name
Firm.



"TROUBLE SAVER"® SECTIONAL STEEL SHORING saves time and money on Mess Hall at Marine Corps Base, El Toro, Calif. Frame load at the heaviest point under the high-arched beam was 1,700 lbs. per lineal ft. "Trouble Saver" frames were spaced on 2'6" centers. Allison Honer Company was the general contractor.

# Prefabricated Steel Shoring Uses Scaffolding Frames, Braces

THERE'S A NEW WAY to cut concrete shoring costs—as proved by three alert contractors who used "Trouble Saver" Sectional Steel Scaffolding for prefabricated shoring on recent construction projects.

One of the largest jobs to employ prefabricated scaffolding for shoring is a 4-story warehouse for Colgate-Palmolive-Peet Co. Requiring 6,300 5'-wide "Trouble Saver" frames, it also used 300 24" "Trouble Saver" Ladder Scaffolds on 7' spacing for spandrels. This shoring was designed so that it could be rolled from one location to another.

On an average-size job, "Trouble Saver" Shoring saved time and money at the Marine Corps Base, El Toro, Calif. Patent Scaffolding Co. supplied 989 6'6'-high by 5'wide frames and 1,450 adjustable extension legs. On a smaller project, costs were cut by using "Trouble Saver" Shoring to build new cabanas for Miami's Blue Horizon Hotel.

Using "Trouble Saver" Scaffolding as shoring cuts erection costs—speeds job—no timber to saw or fit; safe—stresses are figured accurately; adaptable to large or small jobs; accurate sizes stop guess-work; cleaner, neater than wood; steel reduces fire hazard. Distributed by PS Co., "Trouble Saver" Shoring is described in free Bulletin PSS-28.



EASILY LEVELED—Sectional Shoring for 10"-12" floor slab of new Colgate-Palmolive-Peet warehouse at Jersey City, N. J., is accurately leveled by workmen on the ground. They are making adjustments on extension screw legs; no wedging or jacking necessary.



PLYWOOD PANELS are laid on 1-beams without fastening of any kind during construction of cabanas at Blue Horizon Hotel, Miami. 144 5-ft and 6/2-ft high "Trouble Saver" frames were used for shoring.

To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY



38-21 12th Street Dept CM&ELong Island City 1, N. Y. West Coast: 6931 Stanford Ave., Los Angeles 1, Calif. Branches in all principal cities

#### INCREASE BLADE LIFE .

Continued from page 126

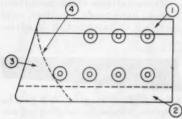
surface (2) therefore wears away faster than surface (1), and at the end of the life of that half of this reversible cutting edge it is worn to dotted line (3) and as is evident, it is still a sharp cutting edge. Without hard surfacing, the cutting edge at the end of its life would have an edge similar to dotted line (4).

Hard surfacing is a fairly expensive operation but under abrasive conditions it pays for itself.

#### Action When Bulldozing

In bulldozer operation, the action against the dirt is more of a pushing operation, and the pressure of the dozer on the surface being bulldozed has a tendency to keep the blade sharp by the operation itself. (In scraper operations, the cutting edge is more parallel to the ground and a true cutting action takes place.)

In the sketch below is shown a



typical end blade or end bit used on a bulldozer. The sketch shows the front of the right-hand end bit of a dozer with bevel (1) facing outward and bevel (2) facing the back of the machine. Hard surfacing is sometimes applied to the outside lower corner (3) similar to the marked area shown on the sketch.

Flow of dirt and pressure of cutting is greatest at the corner, subjecting this part of the end bit to excessive wear. It is not a question of the end bit remaining sharp on bevel (2) but a question of the entire corner wearing away. Dotted line (4) shows how the end bits usually wear. Hard-surfacing prolongs the life of this corner.

#### Flame Cutting

Torch burning or flame cutting of high carbon steel results in a radical change in the steel structure, causing hard or soft spots; visible or invisible cracks; and distortion of the material. This makes it subject to high breakage and/or equally high wear. If it is necessary to apply a torch to a cutting edge, it should be furnace-normal-



## Digs Tank Bed in Hard Rock

IN DALLAS, TEXAS, a formation of hard white rock was encountered on the site of a 2,000,000 gallon prestressed concrete water tank, one of the largest of this type in the U.S. The rock bed was so hard it posed a real excavation problem for Whittle Construction Co.

Whittle whipped the problem by using a CLEVELAND Model 140 Trencher to cut closely spaced shallow trenches across the rock formation. This excavated a considerable volume of rock and enabled the dragline bucket to bite into the weakened ridges of rock between the trenches. As each layer of rock was cleared away the CLEVELAND dug the next level and prepared



it for haul out by the dragline.

This job is only one of hundreds of unusual applications that have proved time and again over 30 years the outstanding toughness and versatility of CLEVELANDS—and their ability to dig more trench in more places at less cost for you.

Get the Full Story on CLEVELANDS from Your Local Distributor



#### INCREASE BLADE LIFE . . . Continued

ized by experienced personnel after the burning operation.

#### Take Your Pick

There are a hundred different sizes and shapes of blades being used for road grading and maintenance work. Actually, Shunk has about 8,000 different specifications on file. But years of experience (the company is 100 yr old) have determined a few standards. For example, for average grading work, the ½x6-in. double-bevel blade curved to an 11-in. radius, pro-

duces the lowest cost-per-mile production. With the advent of heavier and more powerful graders, there has been a tendency to go to a %-in. blade. Selection of one or the other depends on the individual.

Blade life, using a %-in. size, will be increased 50-60% over a ½-in. blade, with a corresponding cost increase of only approximately 25%. This applies primarily to their use on graders approaching 100 hp in size.

· For general maintenance work,

the 1/2 x8-in. blade, single-bevel, curved to an 11-in. radius, with holes punched in the beveled edge to fit the moldboard, has proved to be the most economical to use. This blade has been adopted by most of the western states. Any increase in width over 8 in. has proved uneconomical due to the high cost of production and increased hazard of breakage. One manufacturer has discontinued the use of a 9-in. width for this reason.

#### Choosing a Scraper Blade

In scraper operations, the nature of the terrain has a lot to do with the type of cutting edge used. Where fairly loose material such as loam or sand is encountered, a straight cutting edge across the bowl is generally satisfactory for fast filling and provides an evenness of grade. In hard-packed material, the offset or projecting center blade generally is used. This permits faster filling of the bowl with less horsepower than if a straight blade were used.

Where extreme shock conditions, such as hard heads, boulders, sand rock, are encountered, it is advis-



STRAIGHT EDGE scraper blade is good for fairly loose material, for fast filling and provides for evenness of grade.



OFFSET BLADE has projecting center, is useful in hard-packed material where it permits faster bowl filling with less horsepower.

able to increase the thickness of the standard edges by 1/4 in. and to reduce the width of the center cutting edge by 1 in., in order to eliminate both breakage and damage to the machine. The increase in the thickness of the cutting edge usually compensates in wear for the lesser width of the blade.

#### Do Your Blades Fit?

Hole punching, counter-sinking and end beveling are high on the list in importance, if your blades are going to fit the machines for which they are intended. This seems insignificant, but, for example, blades which have been "hotpunched" are subject to warpage and shrinkage, with resulting

(Continued on page 132)

#### (Advertisement)



GRAIN ELEVATOR is restored the modern, low-cost way - with a dense, bonded concrete surface gunned with Bondactor equipment. Single applica-tion is possible on jobs like this. And you cut costs on your maintenance

work.



PHILADELPHIA CHURCH was completely waterproofed with a Bondactor by John J. Duffin, Inc. A parget coat of sand and cement was shot onto inside walls to form a condensation-proof surface. Then plaster was applied in the usual manner.



KENTUCKY CAPITAL STATUE is wet-sandblasted using a Bondactor. The State Capitol Building was also cleaned without defacing the original stone by using this Bondactor scouring process. Bondactor wet or dry sandblasting cleans: brick, stone, concrete, masonry

#### Concrete Restoration, Waterproofing, Sandblasting, Pipe-Grouting ... You Name It... BONDACTORS Do It

Better, Faster, at Lower Cost! Here's the fastest, best, lowest cost way to restore concrete, insulate, fire-proof, stucco, clean, wet or dry sandblast . . . Bondactor Concrete Gunning Equipment is a real profit-maker!



SEWER PIPE JOINTS are far stronger and stay waterproof and rootproof they are gun-grouted with a Bondactor. Bondactors are also being used to construct concrete T-joints, elbows, Y-joints and other special joints. Also used to repair broken or damaged

#### Accept this Invitation!

Find out all you want to know about the three models of Bondactors now! State intended use and materials to be gunned we'll send you all the facts. Write today!

## EQUIPMENT COMPANY

1010 West 24th Street Kansas City 8, Missouri This suggestion solved their problem. Saved them Money, too!"

The public works department of a large Southern county had run into a serious problem with their road building equipment.

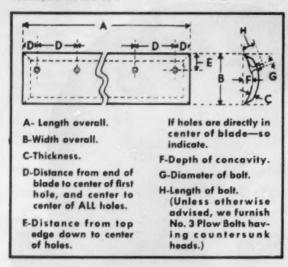
Sinclair Representative J. E. Gilmer reports, "The oil being used was high-priced but certainly not up to the requirements of this type of equipment. Bearing wear was high and carbon and sludge were found in all of the engines. There was definite need of an oil with better oxidation stability under extreme operating temperatures and heavy load conditions.

Mr. Gilmer continues, "I suggested Sinclair SUPER TENOL®, pointing out that this oil contains special additives to clean engines and *keep them free* of carbon and sludge. Moreover, its better oxidation stability helps prevent corrosive wear of bearings and rings.

"The county warden gave SUPER TENOL a test — the results of which proved my suggestion was right, SUPER TENOL gave far better service than the more expensive oil previously used. Of course SUPER TENOL is now used exclusively in all of this county's road building equipment."

Why not give a Sinclair Lubrication Engineer
the chance to help solve your lubrication problems.

There's no obligation. Contact your local Sinclair Representative or write
Sinclair Refining Company, 600 Fifth Avenue, New York 20, N.Y.



SPECIAL BLADES can be made to order by the manufacturer. Shunk requires the information above. A rough sketch helps.





GRADER MOLDBOARD is furnished with replaceable cutting edge and ends. Above is rear view of standard two-section grader blade.

trouble in making them fit. The most accurate method of putting bolt holes in blades is to cold-punch them. Spacings should be determined by accurate gage blocks. Counter-sinking is best performed by the use of a multiple counter-sinking machine with accurate steps for correct depth.

Three methods are used in beveling or sharpening the ends of the blades: Burning, grinding and impact forging. The latter, used exclusively at Shunk, is best because it compresses and integrates the steel structure to provide a tough, long-wearing end.

#### Use New Bolts and Nuts

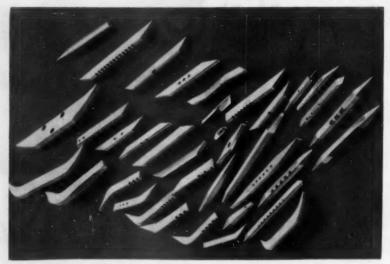
Most contractors find it advisable always to use new bolts and nuts rather than try to salvage the old ones. The old ones have been subjected to strain and stress, are hard to take out and put in and are likely to "pop their heads."

#### Tip Off a Distributor

It is important when a contractor moves on a new job that he contact the distributor for cutting edges or blades in that area. The distributor will appreciate model numbers of the equipment on the job, so he has a chance to stock the spares probably needed and can give quick service.

#### Another Tip

A final tip: On every fifth pass over a washboard road, use a scarifier blade. This will materially improve the road's conditions and the increased blade cost when scarifying will be more than offset by



SCARIFIER TEETH are available in many types, shapes and sizes. Well-timed scarifying saves time, power, wear on equipment and speeds earthmoving on many jobs.

the increased life of standard blades. Here is a case where a scarifier blade makes it easier for standard grader or maintainer blades.

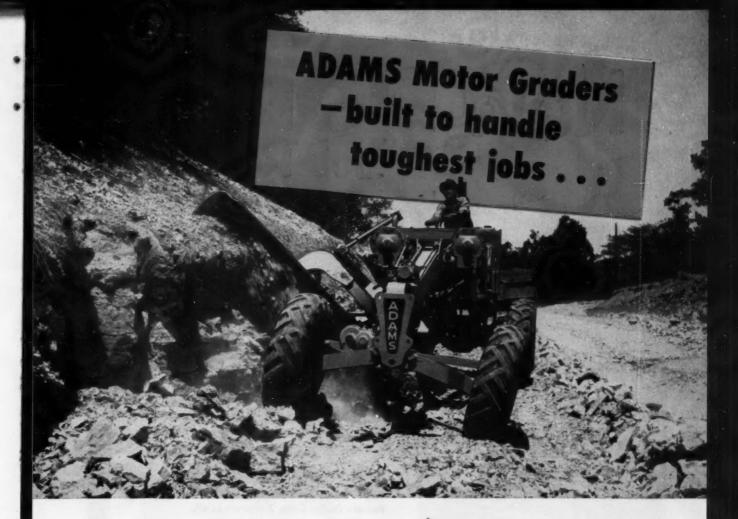
An area 3 ft 6 in. wide and 10 ft long will store more than a carload

(960) of ½-in.x6-in.x6-ft blades when stored vertically on end and in racks. These racks can be of simple welded angle-iron construction. This method is safe, and provides easy identification and inventory control.

#### "Lime Stabilization of Roads"

THE WHOLE STORY of lime stabilization, its diverse methods of application, its potentialities, its limitations, its methods of evaluation, salient facts of 26 different lime projects, and cost data are

contained in a new 68-page book, "Lime Stabilization of Roads," published by the National Lime Association, 925 15th St., Washington 5, D. C. Single free copies may be obtained.



■ Jobs for motor graders don't come much tougher than the heavy bank-cutting operation shown above. Working in rugged, rocky country like this demands unusual power, strength and stamina—the kind that Adams Motor Graders are world-famous for.

The ability to stand up under punishing work is only one of the many advantages you will find in Adams Motor Graders. They also give you a combination of time- and money-saving features not to be found in any other machines. (See listing at right.)

Before you buy any motor grader, let your local Adams dealer show and demonstrate what these advantages can mean to you in the way of higher production and lower costs.

J. D. ADAMS MANUFACTURING CO. . INDIANAPOLIS, INDIANA

#### Only ADAMS Offers All These Features:

- NEW CONSTANT-MESH TRANSMIS-SION—quick, easy, positive gear shifts.
- 8 FORWARD SPEEDS—up to 26 mph. for fast transport.
- 4 REVERSE SPEEDS—up to 13 mph. Save time on shuttle work.
- 3 CREEPER SPEEDS—low as ¼ mph. (Optional).
- RUBBER-MOUNTED ENGINE—floating power—no vibration transmitted to grader.
- DUAL BRAKING SYSTEM—quicker, easier, safer stops, with less effort.
- FOOT ACCELERATOR—for easier, safer overland travel.









Motor Graders

TraveLoaders

Putl-Type Graders

# New DODGE "Job-Rated" TRUCKS

NEW! Roomiest Cab! Wide, 3-man cab with easy-chair seat. 951 sq. in. windshield and best all-around visibility of any make.

NEW! Sharpest Turning! 39° turning angle, short wheelbase design for top maneuverability. Easiest handling trucks there are!

NEW! V-8's and Sixes! Most powerful V-8's in popular field-133 to 172 h.p. Plus famous Dodge Sixes. 7 engines in all.

NEW! Low-Built Lines! Built low for better road stability, easier loading, ground-hugging good looks. Lower step for easier cab entry.

ALL ADD UP TO

## All-new Dodge trucks

offer a better deal in low operating and upkeep costs, too . . . are priced with the lowest. Make it a point to call your friendly Dodge dealer-or drop in to see him soon. You'll like these new trucks!

## "A better deal for the man at the wheel

See "Break The Bank" with Bert Parks on TV (ABC, Sundays). Hear "The Roy Rogers Show" on radio (NBC, Thursdays). See "Make Room For Daddy" with Danny Thomas on TV (ABC, Tuesdays). Enter the Dodge 40th Anniversary All America Contest. See your dealer.

# CONCRETE MIXING AND PLACING



## 6a. Permanent Plant Facilities

By THEODORE B. APPEL, Jr., Chief Engineer, The C. S. Johnson Co., Subsidiary Koehring Co.

PERMANENT PLANTS include ready-mix plants of both the transit-mix and central-mix types, concrete products plants, and mass concrete plants. All but the last will be identified readily by the reader.

The term "mass concrete plant" needs some explanation. Plants included under this classification are those commonly known as large dam plants. The term "large dam plants" is unsatisfactory because these plants are used wherever a large yardage of concrete is to be placed in a small or restricted area. They are the plants used by contractors on heavy construction.

A mass concrete plant is designed to produce concrete in volume for a project requiring a relatively few different mixes. The ready-mix plant is called upon to produce any one of several hundred mixes. The concrete products plant produces only a few mixes and these are quite different from those produced by the mass concrete plants and ready-mix plants.

It may appear that ready-mix plants, concrete products plants,

and mass concrete plants have little in common. Further, mass concrete plants are not strictly permanent plants. They are set up at the beginning of the job, used during the life of the job and removed from the job site upon termination of construction operations.

In spite of these dissimilarities the three types of plants have much in common. Material handling facilities used on ready-mix plants are similar to those used on concrete products and mass concrete plants. Construction is the same, or similar, for mass concrete plants also must be enclosed to protect the equipment and operator against the weather—since practically all heavy construction projects extend over a period of 2, 3 or more yr.

#### **Aggregate Handling**

The selection of new aggregate handling equipment or the replacement of existing units should be based on a careful evaluation of the need for it, first cost and estimated operating costs. In this evaluation it is vital that considerable

importance be placed on the increased dependability likely to result. Breakdowns and other production interruptions may seriously jeopardize an otherwise successful business. Sometimes the cost of these interruptions of service can be measured. More often it is difficult, and sometimes impossible, to evaluate the damage to the company's reputation if many of these interruptions occur.

The resources of a company may place a limit on the capital to be invested. It is not unusual for a firm to install equipment of a certain type because it was impossible to raise additional capital, even though this additional capital would make possible the purchase of equipment better fitted for the plant.

Finally, operating cost must be considered carefully. Generally the owner will have little control over the wages to be paid his labor. He will find it necessary to pay the prevailing wage rate of his community. He does have some control over the number of employees on his payroll, and his

(Continued on page 138)

# Here's Good News!

LE ROI performance

## in a front-end loader and truck mixer line!

Newly formed Le Roi-Transo division offers you an outstanding line of material-handling equipment that delivers the high standards of performance you have come to expect from Le Roi

Now — through the Le Roi-Transo Division — Le Roi brings you front-end loaders and truck mixers — proved performers that do your jobs faster, easier, at less cost.

Le Roi-Transo Front-End Loaders give you the extra power and dependability of famous Le Roi engines, plus mobility and speed — to let you scoop, carry, maneuver, reverse, and dump with pin-point accuracy and efficiency.

Features include patented "Bucket Rocking Action" for faster, heaped loads . . . torque-converter that supplies a smooth flow of power to the drive wheels . . . clutch-type reversing transmission that cuts reversing time 95% . . .

low-carry position that assures loader balance, adds safety and maneuverability.

Le Roi-Transo Truck Mixers are Le Roi-powered, truckmounted mixer-agitators with outstanding performance records for mixing action, fast loading, speedy discharging of slump concrete, shock-free starting and discharge-reversing with a full load.

The patented Transo direct drive eliminates non-productive dead weight — eliminates ring gears, chains, and sprockets, thus cuts replacement and maintenance costs.

Yes, sir, Le Roi-Transo Front-End Loaders and Truck Mixers are engineered to speed your work and keep costs down. In addition, Le Roi provides a nationwide network of distributors that puts genuine Le Roi-Transo parts, skilled mechanics, and expert service as near as your telephone.

Have your Le Roi-Transo distributor tell you more about the Le Roi-Transo unit that meets your requirements. Write for bulletins.

Compressors
Rock Drills
Tractair
Engines
Front-End Loaders
Truck Mixers



dependability

LE ROI COMPANY MILWAUKEE 14,

A Subsidiary of Westinghouse Air Brake Co.

Plants: Milwaukee • Cleveland—Greenwich—Dunkirk, Ohio • Coldwater, Mich.

70-10

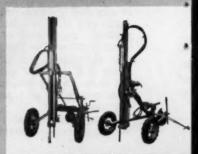
#### LEROI GIVES YOU MORE FOR YOUR MONEY!



Le Rei Airmester Air Compressors
8 sizes -- 14 models



Le Roi Tractair — Cembination 35-hp tractor and 105 cfm compressor



Le Rei-CLEVELAND Wagen-Drills — Heavyduty model DR30 and lightweight DR34





#### MORE UTILITY! . MORE PRODUCTION! . MORE PROFITS!





Le Roi-CLEVELAND Paving Breakers and Sinkers — Sizes from 18 to 80 lbs.



Le Roi-CLEVELAND T-286 Self-Propulied Dual Drill Rig — equipped with eir-leed sinker drills or drifters



Fig. 1 . . . OPEN INCLINED TYPE of bucket elevator on a chain brings up aggregates from a pit and dumps above the bins—from which point materials are spouted into proper compartments.



Fig. 2 . . . VERTICAL AND ENCLOSED BUCKET ELEVATOR is more expensive installation than open type, but materials cannot blow out of buckets. Enclosure should have good steel supports.

#### **Material Handling Equipment—Capacities**

Concrete Production C.Y./Hr.		AGGREGATE HANDLING						CEMENT HANDLING			
	Req'd Cap. Tons/Hr.	Clamshell Bucket— Size Req'd		Bucket Elev.— Size Req'd (1)		Belt Conveyor— Size Req'd		Req'd Cap.	Screw Conv.	Bucket Elev.	
		Car-Stock	Stock—Bin	Chain Type	Belt Type	Mat'l 3 in. and Less	Mat'l 6 in. and Less	Bbl./Hr.	Size Req'd	Size Req'd	
5	8	3/8	3/8	10x6 in.	10x6 in.	18 in.	24 in.	7	8 in.)	8x5 in.	
10	16	3/8	3/8	10x6 "	10x6 "	18 "	24 "	13	8 " 8	8x5 " 🗟	
20	33	1/2	3/8	10x8 "	10x6 "	18 "	24 "	26			
30	49	1	3/8	10x8 "	10x8 "	18 "	24 "	39	8 " 8 Note	8x5 " 8x5 " Z	
40	65	11/4	1/2	12x8 "	10x8 "	18 "	24 "	52		8x5 "	
50	81	11/2	3/4	16x8 "	10x8 "	18 "	24 "	65	8 " 8	8x5 " 0	
60	98	13/4	1	18x8 "	12x8 "	18 "	24 "	78	8 "	8x5 "	
70	114	2	1	22x8 "	14x8 "	18 "	24 "	91	10 "	10x6 "	
80	130	21/2	11/4		16x8 "	18 "	24 "	104	10 "	10x6 "	
90	146	3	11/2	*****	18x8 "	18 "	24 "	117	10 "	10x6 "	
100	163	3	11/2	*****	20x8 "	24 "	24 "	130	10 "	10x6 "	
125	183		134	*****	22x8 "	24 "	24 "	163	10 "	12x7 "	
150	224		2	*****	*****	24 "	24 "	195	10 "	12x7 "	
175	264		21/2		*****	24 "	24 "	228	10 "	12x7 "	
200	325		3	*****		30 "	30 "	260	10 "	14x8 "	
250	406		*****	*****		30 "	30 "	325	10 "	14x8 "	
300	488	*****				36 "	36 "	390	10 "	14x8 "	
400	650		*****		*****	36 "	36 "	520	10 "	Two 14x8 in	

<sup>(1) 6</sup> in. wide bucket not recommended for materials larger than 1½ in.
8 in. wide bucket not recommended for materials larger than 3 in.

equipment should be purchased with this in mind.

· Aggregate delivery to the plant site is likely to be either by rail or by truck. There are exceptions, such as with plants located at

quarries or on waterfronts receiving delivery by barge. The aggregates at the plant may be handled by crane with clamshell bucket, bucket elevators or belt conveyors.

storage or storage of these materials in the bin only.

One of the most effective ways of unloading of aggregate, and certainly the only economical way, is There may be auxiliary ground to spot the car or truck over a

<sup>(2)</sup> Recommend minimum of 10 in. screw conveyor and 10 x 6 in. elevator because of excessively long time required to unload railroad car or trailer unit when smaller facilities used. Sizes smaller than 8 in. screw conveyor and 8x5 in. elevator not recommended for concrete plants under any circumstances.

hopper and to discharge the aggregates into this hopper. A belt conveyor beneath the receiving hopper carries material to the other aggregate handling facilities.

Small receiving hoppers which require little excavation below the track are available. These have the advantage of low first cost and are indispensable in regions where there is high ground water. It is to be expected that the cleanup after unloading an aggregate car into one of these hoppers will considerably exceed that required if the car were discharged into a large receiving hopper. In fact, there is generally no cleanup required when a large hopper is provided.

• Truck delivery to bin by ramp probably is the simplest way to handle aggregates for a concrete plant. This can be done when the plant is located at the bottom of a steep hill or cliff, the top of which is nearly equal in elevation to the top of the bin. Such an arrangement allows construction of a ramp across which the dump trucks can be backed to allow dumping of the sand and coarser aggregates into the proper bin

compartment.

The operating costs of a ramp plant will be considerably less than one requiring much mechanical equipment to place the materials into the proper bin compartments. The only real disadvantage of a ramp plant is that generally there is no provision for auxiliary ground storage. This requires that the delivery of aggregates to the plant be dependable, flexible and respon-

sive to load demands.

#### **Costs Less to Operate**

The first cost of a bin for a ramp plant will be greater than that of other bins. It is essential that the bin be strong enough to carry the additional weight of the roadway on top of the bin, and the weight of the one end of the ramp if there is not a bent immediately adjacent to the bin to carry this end of the ramp. This additional weight may require larger columns, but it is likely that the bin shell itself also will have to be stiffened to carry roadway load concentrations.

Bracing of the columns of a ramp-type bin will have to be heavier than that on a conventional bin. When backing a truck across the ramp to the bin, a high horizontal load is imposed on the bin when the driver applies his brakes. This horizontal load or thrust must be carried down





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"Our trucks have a forty mile county road logging haul over adverse grades, each truck making two complete round trips each working day. Our shop foreman in charge of maintenance, reports that with the use of LUBRIPLATE Lubricants there has been a minimum of truck down time and replacements of bearings and gears. The double reduction gears with LUBRIPLATE APG-140 has shown a saving of fifty per cent over previous operations."

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#### CONCRETE . . . Centinued

through the bracing to the founda-

The roadway on top of the bin should have an open deck. Old railroad rails laid upside down on top of stringers make an excellent deck for this purpose.

• Rail delivery is common for smaller operations and for new ventures in the ready-mix business. Aggregates may be brought into the plant area by railroad car, unloaded by crane equipped with clamshell bucket, and either placed in storage or directly into the bin. This type of operation is almost identical with that used in plants for paving operations.

There are a few essential differences between the aggregate handling by clamshell bucket for ready-mix operations and for paving operations. Paving operations consume materials at a rather uniform rate. Such is not the case with ready-mix operations. Most ready-mix plants must produce at a very high rate for the first hour of each day. At the beginning of the work day all haulage units, whether they be transit-mix, agitator or dump trucks, are empty and ready to receive the concrete. The building contractors will be anxious to start pouring operations as early as possible so that finishing operations will not have to be carried on too late in the evening.

This means that the ready-mix operator probably will have to produce at a rate two and a half to three times his daily average during the first hour. Consequently, it is necessary to provide ample bin storage in ready-mix plants to carry the plant over this daily peak, or to select aggregate handling equipment much larger than required by the average hourly production.

As far as load demand is concerned, the concrete products plant is somewhat similar to the highway paving batcher plant. In this case we do not have the high demand at the beginning of each work day.

The accompanying table shows, among other things, the relation of the hourly production rate of concrete and the size of clamshell bucket required to charge the bin from storage. The size of bucket required if the crane is to be used to unload railroad cars, in addition to keeping the bin charged, is also shown. Tables of this kind must

(Continued on page 142)

# INDIAN DRINKING WATER & SUPPLY TANK

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Because there is no one safety belt that gives the best protection for every job, matching the belt to the need is all-important.

You get this selection advantage at M.S.A. Our complete line of safety belts lets you satisfy your specific requirements for safety belt protection . . . you get the belt that's built for the job.

for the job.

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M.S.A. Leather Safety Belts are made from the highest grade
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4,500 to 5,000 pounds. Strace Web Safety Belts have a tensile
strength of 2,800 to 3,600 pounds. Both these materials
are treated to resist moisture, mildew and the effects of
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webbing, and molded with a mixture of neoprene and
special rubber, for chemical resistance, are tested at 2,800
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This type of belt gives extra body support, and the adjustable shoulder straps distribute the weight more evenly available in genuine leather or webbing.



#### STEEL TAIL LINE

Strong belt anchor made of light flexible steel cable with drop-forged snaps at both ends. Quick to attach or release. Standard cable is 6 feet long, but may be had in any desired length.



Available in ½", ¾" or ¾" rope with drop-forged snap at one end, loop at other, or any combination required. All splices have four tucks, wrapped ends. Furnished in any length desired.



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be used with great caution because conditions vary from plant to plant.

· Bucket elevators, chain-type-Bucket elevators have been used extensively to raise aggregates from a pit or from some other charging facility to a point above the bin from which materials may be spouted to the proper bin compartments. They are nothing more than a great number of small buckets attached to either a chain or a rubber belt. They may be either the open inclined type such as that shown in Fig. 1, or the vertical enclosed type such as shown in Fig. 2. Either type may be a chain elevator or a belt elevator.

Chain elevators will have the buckets mounted on a single chain or two chains running side-by-side, depending on the height of the elevator. Bucket elevators for aggregates are almost invariably of the so-called continuous type which operate at a speed of from 125 to 200 fpm. In the continuous elevator, the buckets are closely spaced one to another so that when the material is fed into the boot of the elevator it will fall directly into the buckets. The design provides for the material to go into the buckets rather than into the bottom of the elevator.

At the discharge at the top of the elevator, the material flows across the back of the preceding bucket into the discharge chute. These elevators are different from those normally provided to handle cement, which are of the spaced type and which depend on centrifugal action to throw the material out of the bucket and into the discharge spout at the head end of the elevator.

The chain furnished with an aggregate elevator is generally of the kind known as combination chain. It may be made of malleable iron block links with steel side bars and steel pins, or it may be an all-steel chain. Malleable iron chains are suitable for short elevators but are not strong enough to carry the load of a high aggregate elevator.

The chain used in aggregate elevators should not be subject to a working load greater than approximately one-eighth of the average ultimate tensile strength of the chain. If this practice is not followed, the chain fails, generally without any warning whatsoever. and the operator is faced with the job of picking up the tangled mass



All the important features contractors have wanted for years are built into this new great line of CARVER Self-Priming Pumps . . . truly in every way 'The Contractor's Pump."

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a formidable hazard to a contractor engaged in laying 4 in. natural gas pipe. He consulted with Saverman engineers.

The result was an efficient working arrangement using equipment best suited for that particular job. The crossing was made with minimum expense and risk.

A truck cable was stretched across the river and hung so it closely paralleled the slope of the river bed. A Sauerman Crescent Scraper was attached to a single-wheel carrier which rode the track cable. Digging depth was almost automatic, since the scraper could dig no further than the length of the cable which attached it to the carrier. The track cable also served to keep the scraper working in a straight line.

The \( \frac{4}{4}\)-cu. yd. Crescent was powered by a two-drum hoist. Maximum span was 700 feet. One man handled the entire trenching operation. A second man was used occasionally to check the depth of the cut. Material pulled in by the scraper was removed by a small clamshell.

For mere information and some new ideas, write for Field Report 219, Scrapers with Boom Machines, Field Report 209, Scrapers with Tractors and Catalog J.



of chain and buckets inside the elevator casing.

The sprockets for aggregate elevators cannot deviate, to any appreciable degree, in pitch from that of the chain. If there is a slight difference in pitch, the chain will be forced to slip forward or backward on the sprocket causing rapid wear of the sprocket. For this reason the head sprocket of a chain elevator should be periodically examined to determine the extent of wear. Split-type sprockets should be furnished as original equipment and as replacements because of the ease with which the old sprocket can be removed and a new one installed in its place.

• Bucket elevators, belt-type—The belt elevator has a belt in the place of a malleable iron or steel chain. Belt elevators are run at a slightly higher speed than the chain elevators because they run smoother and can operate at a higher speed without introducing excessive noise or vibration. The higher speed is required for the elevator to carry the load without slippage at the head pulley.

All elevator belts are subject to considerable stretch. During the first year and a half of operation it will be necessaary periodically to shorten the belt by cutting off a short piece from one end and

re-splicing.

Belt-type elevators should be provided with a gravity take-up instead of a screw take-up due to the expansion and contraction or lengthening and shortening of the belt with temperature changes. In an elevator with a screw-type takeup the belt might be just right for operation in the early afternoon. This same belt could become fiddlestring tight in the early morning hours of the next day when the temperatures are lowest if the take-ups are not slacked off at the end of the day's operation. Contraction under these conditions may result in a permanent elongation, even though of small amount.

A belt elevator may be badly damaged if a stone or rock falls between the boot pulley and the underside of the belt and is carried down and around the boot pulley, between the pulley face and the belt. A slat-type tail pulley or a special pulley designed to reduce this danger to a minimum should be used.

When the bucket passes over the head and tail pulleys, the forward and following edges of the buck(Continued on page 146)



Big 11' x 7' bowl and low rear-entry makes Tournaracker excellent target for 2-yd, shovel. All-steel triple bottom withstands impact of the boulders which range from 6 inches to 5 ft. in diameter on this job. Capacity load of  $6\frac{1}{2}$  to 7 bank yards takes 4 passes of dipper.



Needing a space only 12'1" wide to turn around non-step, Tournarockers maneuvered easily, quickly in the narrow load and dump areas. Positive power steer and 4-wheel air brakes (with 2,822 sq. in., total braking surface) assured added safety with the "D's" high speeds.



# Maneuverability pays off at Lookout Point Dam



Relocation will place road 400' above the river bed. Befere assignment to this job, Dennis used his Tournarockers to build a 20-mile highway in Crater Lake National Park and to level a plant site for Alcoa Aluminum Co. in Wenatchee, Washington.

3 D Tournarockers work fast in 27' to 33' widths to relocate mountain road above new water level

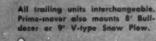
When G. D. Dennis & Sons, Portland, Oregon, contracted with the U. S. Army Engineers to relocate 4.2 miles of County Road 360 at Lookout Point Dam, they brought in 3 D Tournarockers to haul the 265,000 cubic yards of material involved in the project.

With work 75% complete, the 122 hp 9-ton units have kept job ahead of schedule despite rainy weather and large boulders which slow loading and boost weight of material to 4000 lbs. per cu. yd.

#### Each unit moves 52 to 56 yds. hourly

Working on a cliffside about 400' above the Willamette River, the Tournarockers load on a ledge only 33' wide and dump from a ledge only 27' wide. Short turn radius

122 hp, 28 mph fwo-wheel "D" powers:











7-yard Scraper

10-ton Cran



(12'1") lets the "D's" position quickly, easily. Time studies, taken with the Tournarockers loading material containing about 65% rock, show each unit moved 6½ to 7 bank yards per trip. The large number of boulders in the material upped average load time with 2-yd. shovel to 1¾ minutes. Despite these adverse conditions, each unit still completed a 1300' cycle every 6½ minutes (including ½ to 1½ minutes waiting time) . . . delivered 8 loads (104 to 112 tons) hourly.

#### Versatility earns repeat order

The Company bought their first pair of "D's" in May, 1950, added the third the following year, had a fourth on the way when photos were taken. "We've had our D Roadsters for 3 years using the prime-movers with both Scrapers and Rockers," says Supt. Donald G. Dennis.

"We're particularly impressed with their maneuverability in close places. These machines have done a fine job not only in widening shoulders on highways and construction of narrow access roads, but in leveling plant sites."

It will pay you to investigate Tournarockers. Your Le-Tourneau-Westinghouse Distributor has job-proved facts and figures from work similar to yours. He will also gladly demonstrate the "D" on your work . . . either with a 10-yard Rear-Dump body, interchangeable 7-yard Scraper, logging arch and winch, or 10-ton crane.

Recently, Westinghouse Air Brake Company purchased from R. G. LeTourneau, Inc. their earthmoving and related products together with their Peoria, Toccoa, and Australian factories. Adding the high quality standards, precision manufacturing experience, and research facilities of Westinghouse Air Brake to the earthmoving developments of LeTourneau, gives you assurance that the improved line of equipment offered by this strong new company is the finest on the market. Be sure to check LeTourneau-Westinghouse before you buy.

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LeTourneau-Westinghouse Company

PEORIA



ILLINOIS

A Subsidiary of Westinghouse Air Brake Company



#### CONCRETE . . . Continued from page 143

et are separated from and do not lie flat against the belt because the belt conforms to the curvature of the pulley while the back of the bucket does not. This allows small pebbles and sand to collect between the back of the bucket and the belt. This is difficult to eliminate and is one of the inherent objections to a belt-type bucket elevator.

The foregoing table shows recommended sizes of bucket elevators for various concrete production. It may be noted by comparison with the rated capacities of elevators as

listed in many manufacturer's catalogs that the table lists capacities much smaller than those shown in the catalogs. The reason for this is that manufacturers' ratings are based on the filling of each and every bucket to a certain percentage of a theoretical capacity. Seldom is it possible to operate under these conditions.

Interruptions in the feed of the material to the elevator and other factors will considerably reduce the effective capacity of the elevators. The elevator capacities given in the table are based on supplying

material at a uniform rate throughout the work day. This means that the high early demand inherent in ready-mix operations must be carried by drawing on the material stored in the bin, or the elevator must be large enough to handle this peak demand.

The advantages of bucket elevators are: (1) Low first cost; (2) low operating cost. No highly paid, skilled operation is required; (3) require a minimum of ground space.

Bucket elevator disadvantages are: (1) Chain or belt breakage; (2) apt to produce contamination of materials; (3) low capacity when compared with belt conveyors.

The open, inclined elevator has a price advantage over the vertical, enclosed elevator. On the other hand, materials may spill from the buckets of open inclined bucket elevators and fall or be blown over a considerable area adjacent to the concrete plant. This makes working in or near the plant unpleasant, to say the least.

Elevator casings for aggregate elevators should have four vertical angles, one in each corner, which would constitute the load bearing members of the casing section. The thin sheet side walls of aggregate elevators cannot be depended upon to carry the full weight of the elevator indefinitely. Spillage at discharge and spillage from loaded buckets result in a continual rain of sand or aggregate inside the elevator casing. This material, which is naturally abrasive, bounces from wall to wall. The walls thus wear rather rapidly and in due time become so thin that they no longer are able to carry the weight of the portions of the elevator above.

If the casing is made of a framework of four angles with the usual steel sheets for side walls, there is little danger of collapse of the elevator. Not many elevators of concrete plants are so constructed because such an elevator commands a premium price and too often elevators are bought on a competitive price basis only.

• Belt conveyors handle aggregates most efficiently and with a minimum of trouble. Belt conveyors will carry a high yardage day in and day out, in fair weather and in foul, with little attention. Periodic lubrication of the idlers generally is all that is required.

The maximum slope of a belt conveyor in an aggregate plant is usually 18 deg. If the conveyor is



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chances
when
buying a
mixer
either!

Taking chances on highways and streets costs America 2,092,000 casualties annually.



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Poliofistal, New Jersey

steeper than this, slippage of the material on the belt is almost certain to occur. Even 18 deg may be steep for well-rounded pebbles or gravel of great uniformity of size with little grading. In this case the maximum slope should not exceed 15 to 16 deg.

For years, those who desired to buy the best, usually specified large diameter troughing carriers and return idlers. This was necessary when these were not equipped with anti-friction bearings. The larger the roll the slower it turned for a given belt speed. The belt conveyor carriers which are used today on conveyors for aggregate plants, almost universally are equipped with anti-friction bearings. For that reason small diameter carriers and idlers can be expected to give excellent service. The additional cost of a larger diameter is seldom justified.

A belt conveyor for a ready-mix plant should have a walkway along at least one side. Seldom is it necessary to have a walkway on both sides of the conveyor. The carriers and idlers must be fitted so that they can be lubricated from the walkway side. There should be a continuous sheet or decking between the troughbed belt and the return belt so that sand, pebbles and dirt will not fall on the return belt below. This sand will cut into troughing carriers and pulleys, materially reducing their life.

The belt conveyor should be equipped with special belt retainers or an enclosure on one side with a roof over the troughed belt itself. These are necessary to prevent a high wind from blowing the belt off the troughing carriers.

The table also shows capacities that may be expected from belt conveyors. It should be noted that, except for plants for high hourly production, the width of belt usually is dictated by the size of particle to be carried; the larger the particle, the wider the belt.

Were it not for the fact that belts sometimes are damaged by the wedging of a timber, piece of tramp iron or other material in such a way as to cut the belt from one end to the other, the author would recommend that the plant owner make certain that his conveyors are equipped with the premium grade of conveyor belting-for it will give premium performance and, if not damaged, more economical operation.

THE NEXT ARTICLE of this series will appear in the May issue.

# Pick the right jack e iob from the world's MOST ADVANCED line of hydraulic jacks



EXAMPLE: 50-ton model GB-11 fits into cramped quarters - is one-man operated. Note short handle. Following are other big features:





PROTECTION -



GAUGE PLUG PROVIDED -It's easy to attach a gauge to measure the load on the jack —for testing, weighing, press-ing to predetermined pressures.

## The MOST EXTRAS - and the MOST COMPLETE line -1½ to 100-ton capacities

Major jack users soon discover the completeness of Blackhawk's line means you can quickly get the right jack for the job. And their experience has proved that the most dependable, longest lasting hydraulic jacks are built by Blackhawk, What's more— after a long productive life— it's easier and less costly to replace worn parts on a Blackhawk and get it back in full action in a hurry.

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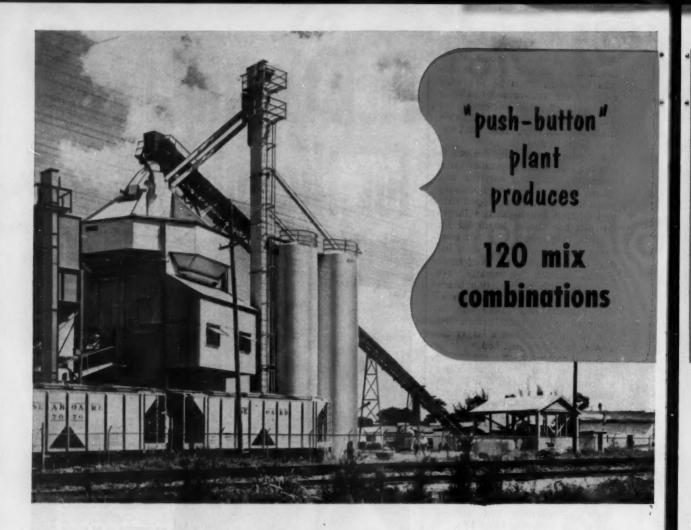
- 68% of all replacement parts are now interchangeable among the most popular Blackhawk models
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## Repeater" automatically re-batches any mix selection

At the turn of a dial and push of a button, this Johnson commercial transit-mix plant produces any one of 120 different size and type batches of aggregates and cement. It weighs out any combination of materials you select on the central dial-scale control panel . . . and automatically repeats any batch selection for a predetermined number of times.

The electric-control, 120-mix-selector panel can provide for 2500 or 3000 psi concrete, in any combination of materials, in ½ to 2 cubic yard batches. For each size batch there are individual selections for 3 to 6-inch slumps. Dial system makes it easy to change from one mix selection to another. To get any size or type of batch, operator merely turns the selector dial, sets the "repeater", pushes the "start" button . . . and the plant weighs out

fast, with pin-point accuracy. During the batching cycle, a lock prevents accidental change of the mix selector.

Nine material weigh-dials on the control panel have individual pen-recorders. Exact weight of each batch is automatically graph-recorded. Johnson batching equipment consists of: six 5000-lb. aggregate batchers (two with automatic moisture-compensators) . . . a 3000-lb. cement batcher with dual fill valves for selecting 2 types of cement . . . 2000-lb. water weigh-batcher, and a 5-lb. (80-oz.) air entraining admix batcher. All fully automatic. Similar Johnson equipment is also being used success-

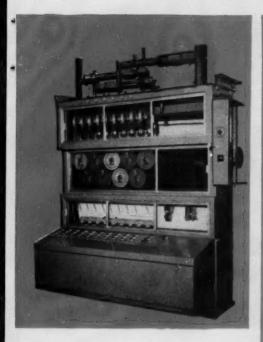
Similar Johnson equipment is also being used successfully on smaller, 24-mix-selector plants. Whenever you plan a new plant . . . or want to modernize, an existing set-up, look into the increased efficiency you can get with Johnson equipment. You'll find your Johnson distributor is at your service, ready to help at any time.

C. S. JOHNSON COMPANY
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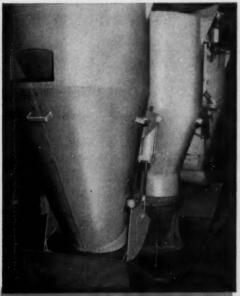
JOHNSON concrete PLANTS

BINS . BATCHERS . HOPPERS BILOS . ELEVATORS . BUCKETS



#### Push-button control cabinet

with 9 material weigh-dials provides full-automatic operation for Johnson 120-mix-selector plant. In addition to selector and "repeater" controls, time and date stamp, and a consecutive batch-numbering stamp, it has a complete graphic recording system for all materials. As each batch is discharged, an individual pen-recorder automatically registers the "full" and "empty" weight on graph paper ... makes sure that a complete batch is weighed out.



Single-material aggregate batchers discharge in 8 to 11 seconds. Automatic maisture-samplessaters give dry weight.

## 14½-ft.-per-min. Parsons Trenchmobile

Rubber-tired Trenchmobile drives job-to-job at 12.6 m.p.h. . . . digs 8 to 16 in. wide, 5 ft. deep, up to 14½ ft. per min. Sloping ladder boom makes vertical set-ins, undercuts sidewalks, curbs, old mains. Other features: hinged crumber, "Tap-In" digging teeth, reversible conveyor, optional backfill blade. Also ask your Parsons distributor about the 2 wheel-type and 3 ladder-type Trenchliners® . . . all full crawler mounted.

PARSONS • Newton, lower (Koehring Subsidiary)



## Kwik-Mix Moto-Bug® has ¾-ton capacity

Moto-Bug power wheelbarrow hauls 10 cu. ft. (or 1500 lbs.) of any bulk materials. Has instant gravity-dump, with snub-line control. Climbs 20% ramps or grades. There's full power forward and reverse ... and safe, automatic brake control. Hopper is interchangeable with 1500-lb. platform, or ½-ton (5-ft.) fork lift. Send for Moto-Bug bulletin. Also check Kwik-Mix line of concrete mixers, bituminous and plaster-mortar mixers.

KWIK-MIX • Milwaukee, Wis. (Koehring Subsidiary)

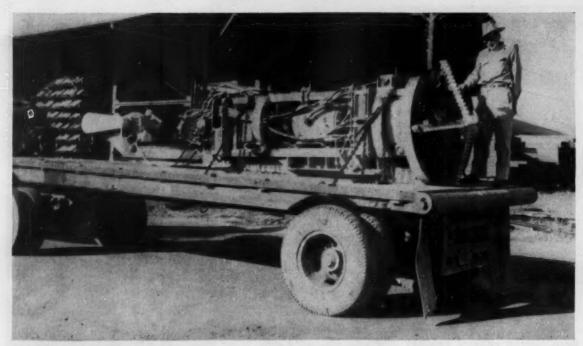


## Save turn-time with Koehring Dumptor®

Fast-shuttling Koehring Dumptor® eliminates slow turns at loader, on narrow haul roads, and at the dumping location. With constant-mesh transmission, Dumptor travels same speeds forward and reverse ... gets its load, drives to fill, dumps and returns to loading unit without turning. Eliminating only 2 turns saves ½ minute on every cycle. Instant gravity dump cuts another 15 to 25 seconds off haul cycles with heavy-duty Dumptors.

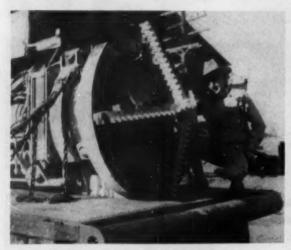
. KOEHRING Company Milwaukee 16, Wis.





TUNNELING MACHINE for driving 48-in. dia sewer is loaded for delivery to downtown Dallas job, where it will cut three headings totaling 2,200 ft through limestone. Telescopic rig slides on tunnel

invert, moves itself inch-worm fashion by pushing out cutter head 20 in., then pulling body up to it. Hydraulic rams built into rig anchor one part or the other in tunnel during moving or mining.



CUTTER HEAD carries four arms fitted with carbide-tipped teeth that chew rock from tunnel face, as head rotates. Head is driven by 20-hp electric motor, is pushed against face by 12,500-lb ram.



DRAG-CHAIN CONVEYOR, which mining machine operator straddles, dumps muck to rear as rig advances heading as much as 3 ft per hr. In foreground is 11/2-yd. tub for muck removal.

# Small Tunneling Machine Halves Crew, Doubles Output

By HENRY T. PEREZ, Senior Associate Editor

BECAUSE THEY SWITCHED to a machine mining method, contractors for a small-bore sewer tunnel in Dallas have been able to cut the underground crew in half, yet increase the rate of tunnel advance by 125%. Added advantages over the ordinary drilling and blasting method used at the start of the job: No overbreak, no trimming, no vibrations imparted to important structures overhead in



TUGGER HOISTS, anchored in drift opposite the heading being mined, pull muck tub back and forth between shaft and machine. Tuggers are set in transition section where mining method changed.



LOADED TUB is hoisted from shaft by Insley Model L 34-yd crane, and muck is dumped into Chevrolet truck for disposal. Tub is shaped to fit tunnel invert, is filled each 2 ft of tunnel advance.



STEEL PINS are driven through 1/4-in. steel-strap hangers with Remington stud driver, here being set up by foreman W. C. Nash. Hangers keep mining machine's electric and water lines out of way.



PUMPCRETE MACHINE at bottom of access shaft delivers concrete to heading through 7-in. pipe for bedding 24-in. precast liner set in 48-in. bore. Note engine exhaust piped above ground.

the downtown heart of Texas' second largest city.

Cullum & Whittle Contractors worked up the mining machine to bore some 2,200 ft of 48-in. circular tunnel in medium-hard white limestone (Austin Chalk) as part of its \$375,000 Town Branch Relief Sanitary Sewer job. Designed by George P. Cullum, Sr., and built by Mosher Steel Co., the telescopic machine is hydraulically centrolled

and electrically powered. It weighs 6,500 lb and is 22 ft long.

At the front, four cutter bars radiate like spokes of a flat cone pointed forward to form a 48-in. dia boring head. As this head rotates, 12 to 15 small carbide-tipped teeth on each arm chew out rock from the face of the heading, advancing it as much as 3 ft per hr. Muck falls to the invert where it is picked up and dumped to the

rear by a 12-in. wide drag-chain conveyor extending through the machine.

The boring rig carries a total of 15 individually controlled double-acting hydraulic rams that advance it, guide it or hold it in position. A longitudinal sumping (advancing) ram, 6 in. in dia and with a 20-in. stroke, operates at 450 psi pressure to force the rotating cutter head against the rock being



ABOVE GROUND, concrete delivered by 6-yd Challenge mixer on Ford F8 truck is loaded into Garbro bucket that insley crane will lower to Pumpcrete machine in shaft. Crane's tank is for LPG fuel.

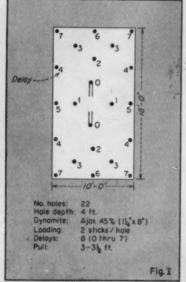


INSIDE TUNNEL, transverse timbers hold delivery line above invert pour, whose concreting proceeds away from Pumpcrete machine. After liner pipe is set, same line will deliver encasement concrete.

mined. Twelve 4%-in. dia, 1,000-psi rams with a 4-in. stroke are mounted transversely on the main body of the machine. These can be pushed out to the tunnel walls, roof and invert to tilt or turn the rig in any direction. They also clamp the main frame tightly in place in the tunnel to resist the torque and thrust of the cutter head, as it rotates and advances.

The final two rams, similar to the 4¾-in. main-frame rams, are fastened to the cutter-head assembly. These are retracted during boring. But after the head has taken its full 20-in. bite, the two rams are extended to the tunnel walls. Then the twelve other clamping rams are released, and the sumping ram is retracted to drag the body of the telescopic machine up to the head in preparation for the next 20-in. advance.

Three explosion-proof electric motors power the machine. A 20-hp Louis Allis drives the cutter head through a reduction gear that gives about 27 rpm, a 2-hp Allis operates two Gerotor hydraulic pumps that supply all the rams, and a 3-hp U.S. motor powers the conveyor. All controls for motors and rams are concentrated at an



ACCESS SHAFT was drilled and blasted by standard methods to take it 15 ft through rock after top 20 ft of soft stuff was dug.

operator's station astride the conveyor toward the rear of the machine.

The tunneling rig is driving three headings (700, 700 and 800 ft long and 90 deg apart) from a single

shaft at their intersection. The shaft is 12x20 ft in plan, and 35 ft deep. It was sunk to rock inside shallow - arch steel sheetpiling driven to penetrate 8 in. into the limestone and braced with three horizontal 12x12-in. timber sets. Some 9 ft of dirt, 6 ft of wet sand and 2 ft of gravel were clammed from within the sheeting to expose the rock below.

After the disintegrated top 3 ft of rock was cut loose with heavy paving breakers, the remaining 15 ft was drilled and blasted for removal in 3- to 3½-ft lifts. Fig I shows blasting details. Because the shaft was being sunk at a busy street intersection, each shot was covered with a 3-ft layer of sand to blanket and muffle the blast effectively.

With the shaft bottomed, the three headings were turned and driven about 12 ft by drilling (with a hand-held pneumatic drill) and blasting. Details are given in Fig II. This operation required six men underground: 1 driller, 1 powderman, 1 monkey, 2 muckers and 1 foreman. Best progress was 10 ft in 9 hr.

In contrast, when Cullum & (Continued on page 154)

# Individual DESIGN In Excavators

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Bucyrus-Erie excavators give you the kind of performance that keeps your hauling units busy moving big daily yardages. Because there's individual design for every model in the Bucyrus-Erie line, the power, speed, and weight of each unit is exactly proportioned for peak operating efficiency in handling its rated load.

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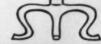
NO POWER BOTTLENECKS to prevent getting full payloads every time.

NO EXCESS WEIGHT to slow down speed of swing.

NO EXCESSIVE LOADS on brakes, clutches and other machinery to hinder smooth blending of operating functions.

There are many other benefits resulting from Bucyrus-Erie individual design. For the full story, see your local Bucyrus-Erie excavator distributor.

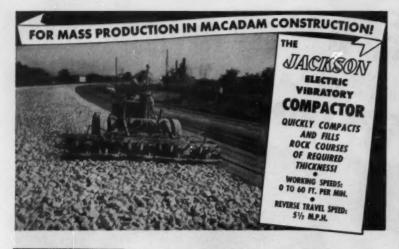




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The JACKSON — in one pass — will sufficiently compact 12 inches of rock to support smooth rollers. In four passes, the JACKSON keys and compacts to final density. It takes just two passes for the JACKSON to completely fill voids from top to bottom of the course, when enough dry fines are spread on top in one application.

optimum moisture, the JACKSON in one pass has obtained densities exceeding 100% Standard Proctor. Vibratory frequency may be varied to suit conditions.

The JACKSON is available in a standard width of 13', 3". Units may be subtracted on the job to meet conditions requiring narrower widths. The 26" units can be detached and fitted with handles, providing self-propelled compactors for restricted areas, pavement patching, paving drives, compaction of granular soils in trenches, etc.

#### WIDENING STRIP COMPACTED IN ONE PASS

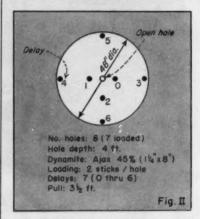
With simple equipment available, compactors may be assembled in tandem, 3 deep and in single or double row, and towed at the side of the tractor to give complete compaction of widening strip in one pass in all granular materials used for flexible base-course widening. Compactor bases of 12" width and up may be substituted for the standard 26" bases to fit any widening requirement.



## SMALL TUNNELING MACHINE . . . Continued from page 152

Whittle put the mining machine in the hole, the underground crew was cut to just three: 1 operator, 1 helper, 1 foreman. At the same time, progress has been more than doubled: Average advance is 20 ft in 8 hr, and it has run as high as 25.

The machine chews out about 34 loose yd of rock per ft of advance. The muck, comparatively finely ground and made somewhat soupy by a water spray that keeps down dust at the cutter head, is conveyed to the rear. It is deposited in a 1½-yd semi-cylindrical steel tub 10 ft long and 23 in. high that slides on the tunnel invert.



48-IN. TUNNEL, at start of job, was drilled and blasted in this pattern. It was super-seded by far-faster machine-mining method that upped the hourly advance from 1 ft per hr to better than 2.5 ft per hr.

The tub is moved back and forth between shaft and machine by cables from two Gardner-Denver air tuggers (operated by the mining foreman) anchored in the blasted 12-ft drift opposite the heading being mined. When loaded, the tub is hoisted to the surface and the muck is dumped into a truck for disposal.

Cullum & Whittle's mining machine has had no difficulty cutting through the limestone. Its smooth boring action, coupled with the tunnel's circular shape and small diameter, has precluded any roof falls and the need for ground support. Sewer plans called for a section of one heading to curve with an offset of 9 ft in 250, which the machine has cut with ease. And contractor Ralph Whittle says that boring curves twice as sharp would be no problem.

When the mining machine has (Continued on page 158)

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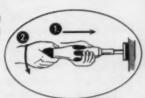
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help the operator do a better job.

Blade work is accurate, smooth because front-mounted lift cases eliminate long liftarm shafts that twist or wind up under load. Tandem drive and shock-absorbing frame add to stability, help prevent blade chatter.

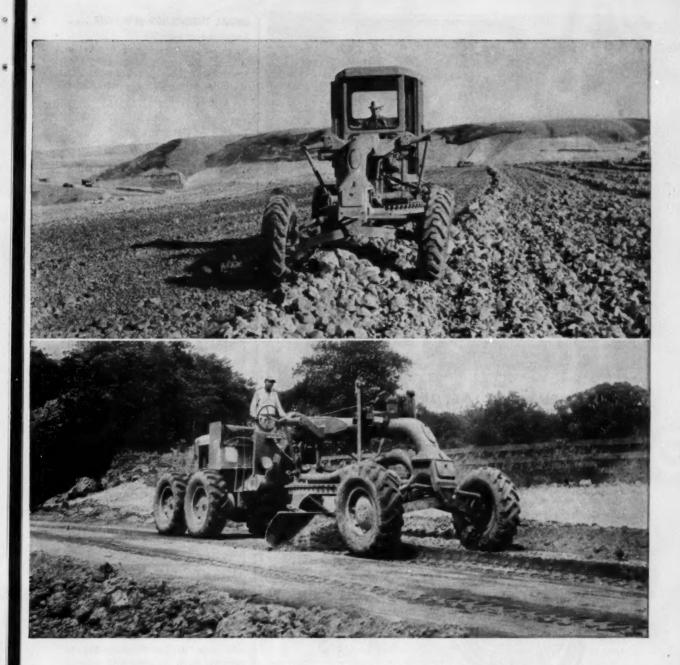
Full range of blade positions plus leaning front wheels permit handling all types of grading with ease.

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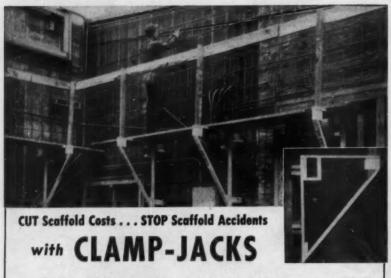
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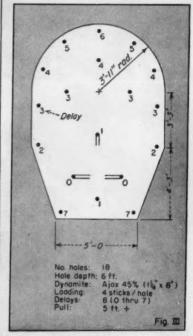
Oldest and largest wheelbarrow maker in America

## SMALL TUNNELING MACHINE . . .

Continued from page 154

completed a heading, concrete is poured to a depth of 4 in. in the invert as a base for a 24-in. dia standard-strength precast concrete pipe lining. The invert concrete is placed with a 7-in. line from a 160 Single Pumpcrete set at the bottom of the shaft and fed with ready-mix concrete lowered in a bucket.

Instead of the usual procedure of starting the pour at the far end and working back toward the Pumpcrete machine, the operation is begun at the shaft and moves away. Thus, empty lengths of delivery line are added as the pour



HORSESHOE TUNNEL, with more room for working, was driven in ordinary fashion with this pattern. Progress: 31/2 ft per hr.

advances, rather than having to remove filled sections and up-end them to dump their loads—an almost impossible task because of the small tunnel diameter.

At the completion of the continuous invert pour, the Pumpcrete line is left in the heading to be used for filling the space around the 24-in. precast liner pipe. The latter is delivered in 6-ft lengths that are rolled into the tunnel on a dolly. When seven to ten lengths have been placed, they are encased in pumped concrete slugged from a slick pipe at the arch. Unlike the invert pour, these encasement pours work back toward the Pumpcrete

machine. A blow valve permits cleaning concrete from a section of line, and a tugger hoist pulls the slick pipe back, as the pour advances.

Cullum & Whittle's contract also included about 1,000 ft of larger sewer tunnel, now completed. A modified horseshoe bore (some 8 ft wide by 11½ high), it was driven by ordinary drilling and blasting methods, with headings turned both ways from a central shaft.

Tunnel section and blasting details are shown in Fig III. Holes were drilled 6 ft (to pull 5 ft plus) by Gardner-Denver hand-held drills carrying 6-ft steel with 1½-in. Liddicoat throw-away bits. Three two-man drill teams handled the job, each team drilling six holes per round.

#### Throw-Away Bit Drills 216 ft

The Liddicoat bits lasted six rounds (216 ft of hole) before discard. The six rounds (pulling 30 ft of tunnel) was just one 9-hr shift's advance, so bits could be replaced between shifts without loss of production.

A single mining crew worked both headings, transferring from one to the other after each round. Each heading, however, had its own mucking machine (an Eimco 21 or a Gardner-Denver 9). This made it unnecessary to turn a machine around to muck the opposite heading. Muckers loaded into 1½-yd cars drawn by an Eimco air-powered locomotive, and each round produced 13 cars of muck. Cars discharged into a sump at the shaft, from which muck was clammed out into waiting trucks.

This larger tunnel carries two precast concrete sewer pipes. One is a 30-in. standard-strength line embedded in a 4¼-ft invert pour carried up to the base of the tunnel's vertical side walls. The other, a steel cylinder prestressed 36-in. line, rests in cradles on top of the poured invert and is braced to the tunnel lining by a hold-down screw jack to the arch at each pipe joint.

The 8-in. lining for the part of the tunnel above the invert pour was concreted in 60-ft lengths in Mayo steel forms. One lining pour was made daily—the forms being moved ahead by carriage in the morning, and the concreting completed in the afternoon.

For Cullum & Whittle Contractors, Dallas, C. F. "Onion" Coke is project superintendent on the downtown sewer job. A. A. Walker is resident engineer for the City of Dallas.



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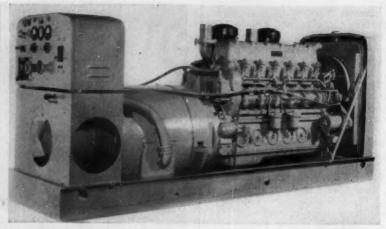


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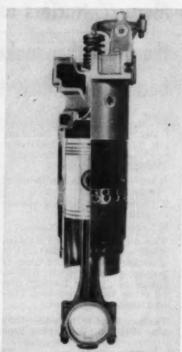
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ALLIGATOR V-BELT FASTENERS



LEADER OF THE NEW FLEET of 2-cycle Harnischfeger diesels—6 cyl, 255 hp—hooked up to a 75-kw generator. Other models in series come in 2, 3, and 4 cyl, from 58 hp up. Engine shown here weighs only 7.06 lb per hp, due to aluminum alloy block, ends, heads and pistons. Handholes in lower block permit disconnecting con rods without dropping oil pan or lifting engine from base.

## New Line of Harnischfeger Diesels Features More Power, Lighter Weight



SECRET of increased power, say Harnischfeger engineers, is full-length water jacket, new design of crown combustion chamber, and arrangement of ports at center of liner. Top row of ports is set at horizontal angle to introduce scavenging air with swirling action; lower holes drilled radially blow out center of cylinder chamber. Note big water chambers around exhaust valve.

HARNISCHFEGER CORPORA-TION is really going out after more diesel engine business in the construction equipment, industrial power, automotive and marine fields. There was no doubt of this in the mind of anyone who attended a press conference March 15 at Harnischfeger's engine plant at Crystal Lake, Ill., and listened to Frank Edwards, diesel engine division manager, and his associates expound the virtues of their new line of 2-cycle diesels of 2, 3, 4 and 6 cyl ranging from 58 to 255 hp. By going to aluminum alloy blocks, ends, heads and pistons, Harnischfeger has reduced the weight to 7.06 lb per hp for the 6-cyl models, a remarkable weight/hp ratio. For the 4, 3 and 2-cyl models the weight per hp is 8.33, 9.3 and 12.5 lb, respectively. Power has been increased up to 36% above previous models of the same size.

Edwards points out that the new series embraces 52 major advancements and refinements, but he is most proud of the improved cylinder assembly resulting in greater efficiency and easier maintenance. Cylinder liners are special alloy cast iron; steel jackets are now Parkerized for maximum corrosion resistance—all components can be replaced separately in the field.

Cylinders are water-jacketed full (Continued on page 162) Eaton 2-Speed Truck Axles





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The original washerless hose coupling, with a reputation for safe, reliable service under hard use and rough handling. Ground joint union between stem and spud provides leakproof, trouble-free seal. All parts malleable iron or steel, rustproofed. Furnished with "Boss" Offset and Interlocking Clamps. Sizes 1/411 to 611, inclusive. Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

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## HARNISCHFEGER DIESELS . . . Continued from page 160

length. Large holes between wall ports connect lower and upper water jackets and allow rapid water flow for greater cooling effect. Exhaust valve assembly is surrounded by water.

Combustion chambers have been redesigned, and pistons are now flat on top. Each cylinder has its own injection pump, each with a single large hole through which fuel oil is introduced into the cylinder at only 3,000 psi. This, according to Edwards, gives a soft spray pattern that "lays like a pancake" above the piston head. Because of the single large injection hole, instead of multiple small holes, cheaper grades of fuel can be used.

Of course, being two-cycle operation, fresh air must be introduced into the cylinder at each stroke. A redesigned blower forces air through center ports at 7 to 10 psi. There are two rows of ports. The upper row, uncovered first by the descending piston, is drilled at a 37-deg horizontal angle with the liner walls to give the first air admitted a swirling motion around the cylinder walls. The lower ring of ports, uncovered a split second later, is drilled radially around the liner to permit air jets to blow into the center of cylinder chamber. The combination increases scavenging of exhaust gases through the top exhaust valve, and fills the cylinder with fresh air ready for the next explosion.

#### **Power Assemblies Identical**

Injectors, camshafts and cranksshafts are all new design. All cylinder and injector assemblies and components are identical for all model engines and are interchangeable. Thus, except for block, camshaft, crankshaft and exhaust manifolds, the engines differ only in number of cylinders.

The new line has been designed with service and accessibility in mind. A complete cylinder head and liner assembly, for example, can be changed in 30 min without dropping the oil pan or moving the engine from its mounting. Piston rods can be disconnected through handholes in side of block. A complete change of the power assembly can be made in a few hours on every size of engine.

Each model of engine can operate at speeds from 800 to 1,800 rpm. Compression ratio is 16 to 1. Bore is 4½ in, stroke is 5½ in., giving a cubic displacement of 87 cu in. per cylinder.

# NEW!

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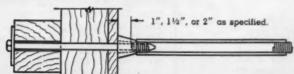
Cuts Form Costs by Permitting
Extra Fast Erection of Panels

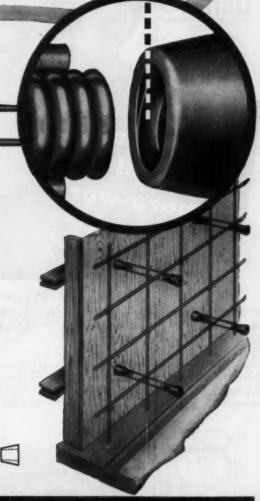


A direct way to cut forming costs is to use new Superior *Threaded* Coil Cones with Cone-Fast Coil Ties. Where cones have to be dependably held in place, *Threaded* Coil Cones are practically a "must".

Previously, Coil Cones were held onto the extended coils by friction alone. Now, a couple of threads in the cone fix Coil Cones securely to the Coil Ties. Here's another advantage . . . units can be bench assembled with the assurance that they will arrive at the installation point intact! *Threaded* Coil Cones cannot be knocked off the Coil Ties when the opposing form is being applied. When unscrewed with a cone wrench, the threaded Coil Cones automatically back themselves out of the wall.

Cone-Fast Coil Ties with threaded Coil Cones are supplied for  $\frac{1}{2}$ " to  $\frac{11}{4}$ " Coil Bolts, with safe load capacities from 5,000 lbs. to 36,000 lbs. Working parts (cones and bolts) are returnable for credit.

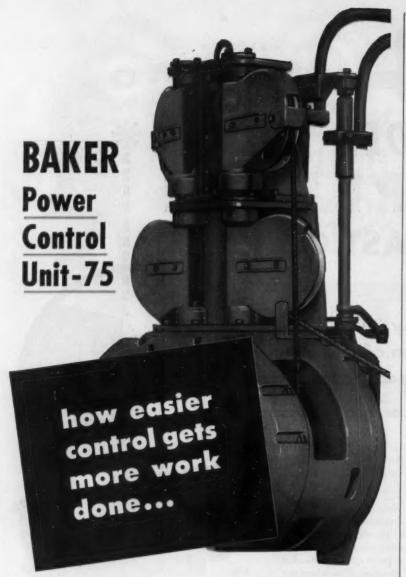




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## On-the-Job Contractor-Labor Relations

by LEON B. KROMER, JR.

#### A Guaranteed Wage?

THERE IS PLENTY of talk about demands this year for a guaranteed wage from major labor organizations. The United Steel Workers have already announced that they are going after a wage guarantee. So have the CIO electrical workers. You may be faced with a similar proposal at the bargaining table this spring for building trades employees. You ought to know not only what the term means, what such plans cost but also the practicability of applying it to the construction industry.

There are several types of plans that fall within the general term of "guaranteed wages." They are:

- A plan whereby employees are guaranteed a certain number of hours work per year at the agreed upon rate;
- A guarantee of pay for a specified period of time, regardless of the actual total hours worked, and
- Plans under which employers contribute a specified amount to a fund (similar to pension and welfare funds) from which payments would be made to unemployed union members to supplement unemployment compensation.

There are of course variations but any would fall within one of the three general categories. Thus, for example, under the third plan employees might also contribute to the fund.

Obviously contractors cannot guarantee a specified number of hours of employment or payment of wages for an agreed period of time. The risks are far too great. These arrangements can only apply to industrial companies with employment more or less stabilized for a period of years. They can be protected against big outlays of funds through eligibility requirements. The plan used by one company, for example, requires that employees must have worked for the company for 3 yr to qualify for any form of guarantee. Thus, you may come face to face with num-

(Continued on page 168)



A Deck-Mounted Clyde Whirlette Handles Cargo Without Benefit of Dock Handling Facilities



Note the Small Amount of Space Needed for This Barge-Mounted Whirlette Handling Structural Steel



Operator Always Faces Load to Have Unrestricted Visibility of Working Area in Yard Served by this Clyde Whirlette.



# ON DECK, DOCK, BARGE OR YARD... ON CONSTRUCTION AND DEMOLITION JOBS...

are "on top of the Job!"

Here's the Clyde Whirlette, a full-revolving steel derrick with a work capacity that is exceeded only by its versatility! Light enough to be practical as a 'top-side' derrick on multi-story construction . . . rugged enough to handle a ton load at 40' or five ton load at 10' . . . it's engineered to bear with pride the trade-mark of Clyde!

Bronze bushed, steel turntable has a machined double taper roller path on which four wide-faced steel wheels support rotating structure of boom, A-frame and hoist. Two-drum Clyde unit has efficient, single-cone, ball-bearing friction mechanism. Heavy-duty brakes permit full load control at all times.

#### SMOOTH, POSITIVE SWINGING . . .

Friction-disc clutches permit boom to be "inched" or swung a full circle at 3/4 to 21/2 r.p.m. Single lever controls chain and bevel gear drive and automatically sets brakes when in neutral position. Tail swing of only 5' 6" permits working in congested areas where ground space is at a premium.

Many other important features of Clyde Whirlettes recommend them for a wide variety of material handling problems. Write for Complete Information Today!



Self-Contained Whirlette . . . An Ideal Material Handling Unit on Construction or Demolition lobs.



A Dock-Mounted Whirlette Loads Equipment and Supplies from Dock to Dredging Barges.

Handling Bulky Hoses from Pipeline to Tanker is a Simple Task for the Compact Clyde Whirlette.



Hoirts & Derricht & Whieleys & Ruilders Towers & Car Pullers & Handri Cranes & Rouers &

CLYDE IRON WORKS Inc.



## FLECO ROCK RAKE SORTS 175 YARDS OF ROCK RIPRAP AN HOUR

## Speeds Construction Work on Tuttle Creek Dam

Riprap on the upstream slope of Tuttle Creek Dam will be a 10-foot rock fill. Rock is delivered to the project mixed with clay and undersize rock and shale. Sorting of this material has been assigned to a Fleco Rock Rake by George Bennett Construction Co., contractors on the first stage of the project.

The heat-treated, cast-alloy steel teeth of the Rake crowds into the dumped fill material under the steady push of a Cat D8 Tractor. Undersized rock and clay sifts through the teeth, while acceptable material rolls down

George Bennett Construction Co. used a Treedezer to clear rightof-way for a new highway. 220 trees were taken out in one day at \$17.50 each. Ask your Dealer about the Fleco Treedezer.

the slope. The curved teeth give the load a rolling action instead of pushing it, cutting tractor work-effort and increasing load capacity. The Fleco Rake handles 3500 cubic yards of the material in a 20-hour shift.

With a Fleco Rock Rake, you can take on the toughest rock job with complete assurance of production and stand-up ability. Fleco Rakes are built for all track-type tractors and are interchangeable with 'dozer blades.

Let your Fleco-Caterpillar Dealer give you production and profit facts on the Fleco Rock Rake that fits your tractor.

FLECO CORPORATION, Jacksonville, Florida



YOUR FLECO DEALER IS YOUR CATERPILLAR DEALER

with **Built-In features** to save you money

MODEL 1055 - 3 1/2 yards

MODEL 955A - 21/2 yards

Strength was no afterthought on this husky machine. It started on the drawing boards - with all-welded construction of tough rolled steels - with extra strength where strength is needed - with the ability to absorb continuous shock loads . . . and the stability to let you use full power for bigger production. It is the steady digging, without time-outs for pampering, that saves you money.

Add smooth hydraulic control to cushion operations and reduce operating fatigue, and you have the built-in advantages to make all kinds of rock work more profitable. The Model 1055 (31/2 yard) and the Model 955-A (21/2 yard) have proved it. Ask to see one on the job.

## MAGNETORQUE\*

gives you the slickest, fastest cycle you've ever known on machines of this size . . . from 15% to 25% faster than any others! And there are no delays for adjustments or replacement of swing frictions. Magnetorque eliminates all that and lasts the life of your machine.

\*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

LARGE EXCAVATOR DIVISION

MILWAUKEE 46, WISCONSIN

the Pall Line

















## 6,000 E-Z SHORE CLAMPS

SPEED CONSTRUCTION ON THIS BUILDING



Brown-Schrepferman & Company speed construction on this multi-story department store building in Denver, Colorado with E-Z Shore Clamps.

#### SAVES LUMBER

2x4's and 4x4's are used over and over. E-Z Shore clamps eliminate nailing, sawing, splitting or discarding of shoring timbers

#### **CUTS LABOR COSTS**

Shoring floors for concrete is completed with less labor, skilled or unskilled. No measuring, sawing, bolting or spiking necessary.

#### SAVES TIME

Shores are set up or dismantled in half or less time. Use for irreguler surfaces (arches, stairways), to build scaffolds, takes tension as well as compression loads.

## GET COMPLETE DETAILS



...for prices and details on direct purchase, rental or trial plan on the original side-swing E-Z Shore Clamps.

#### **WESTERN SALES & SUPPLY**

Gentleme	n: Please send complete infor- nd prices on E-Z Shore clamps.
We would a	use approximatelypair.
Address	
	ZoneState
No.	Title

#### LABOR . . . Continued from page 164

ber 3 and be asked to contribute to an unemployment fund. It is the only form of so-called guaranteed wage that could conceivably apply to the construction industry. However, before agreeing to extend the concept of welfare and pension plans to unemployment compensation you want to consider:

- (a) Would it be possible to establish adequate eligibility rules to define those workers entitled to receive benefit payments when unemployed?
- (b) Can payments be administered and controlled in an industry in which the workers are migratory—moving to areas where there is work?
- (c) Would high administration costs of the fund and the added paper work required of contractors outweigh any monetary benefits to the men?
- (d) In northern areas of the country, with high seasonal unemployment in the winter months, would the fund remain solvent?
- (e) Would the establishment of such a fund tend to encourage unemployment?

As of today, there are no guide posts to follow. Very few plans have been successfully established and none in the construction industry. For most industries, and that includes construction, it's an entirely new field.

One answer to guaranteed wages in construction may be President Eisenhower's proposal to the states that they strengthen unemployment insurance programs. In a letter last month to all state and territorial governors, Secretary of Labor Mitchell suggested that weekly benefits received by eligible unemployed workers equal 60% to 67% of the state's average weekly wage and that the benefit period be extended uniformly to 26 weeks. Under present state laws, the Secretary pointed out, maximum benefits that a claimant can receive come to considerably less than 50% of weekly

## Status of Taft-Hartley Changes

In the house the labor committee:

Voted down a proposal by Rep. (Continued on page 170)

## WET JOBS

#26 of a Series

#### SEWAGE TREATMENT PLANT

Victoria, Texas

Contractor: Mitchel Darby



## PRE-DRAINAGE SOLVES JACKING PROBLEM

Soil composition of the above embankment (see photo) was as follows: first 18 ft, grey clay; below this, a 5-ft layer of coarse sand and large gravel flooded with ground water. Through this water-bearing section, contractor must jack an outfall line of 48-in. diameter—jack this big pipe a distance of 60 ft to the adjacent river.

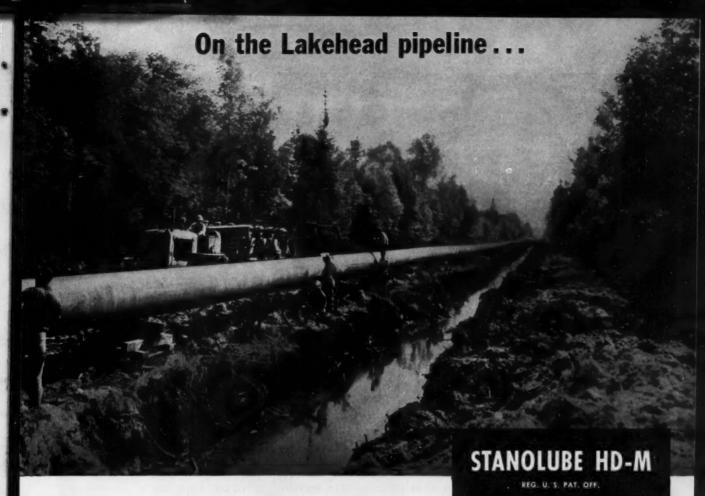
• Old-timers can recall what dismay such water-fighting would once have caused. Today, with modern wellpoint methods, Griffin engineers found a quick, economical solution. Using 2 parallel (but unconnected) header lines — one on either side of the embankment, in a "railroad-track" effect — they successfully lowered water to the required depth. Note separate wellpoint system controlling ground water in jacking pit.

## GRIFFIN

## WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y. Hammond, Ind. Houston, Tax. Jacksonville, Fla.

In Canado: Construction Equipment Co., Ltd.
Tarento Mentreal Hallfax



## Midwestern Constructors Inc., slash through 97 miles of roughest terrain

● Rough, tough terrain . . . dirty weather . . . real bush country right in the heart of America. Here was a job that could take both men and machines apart. But the job was completed—and on schedule! These men knew their work . . . they had the machines . . . and they had a lubricating program that kept their equipment moving.

Midwestern Constructors Inc., contractors for this roughest part of the 635 mile Lakehead Pipeline, between Superior, Wisconsin and Sarnia, Ontario, have this to say about the Standard on-the-spot service: "We gave our equipment a beating but it came through with flying colors because, as hard

as we treated it, sound lubrication service and products kept it on the job."

Your nearby Standard Oil office and warehouse stocks STANOLUBE HD-M and a complete line of Standard quality fuels and lubricants for fast local delivery. Here too is head-quarters for your Standard Automotive Engineer. Call him today. Or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.



STANOLUBE HD-M, Standard Oil's new and better heavy-duty motor oil, combines more effective detergent-dispersant action with greater oxidation stability . . . keeps deposits and wear at a minimum in all types of engines under the toughest operating conditions. Put STANOLUBE HD-M to work for you.

**Motor Oil** 

STANDARD OIL COMPANY



(Indiana)



Whatever the job, there's a SHUNK blade designed to do it efficiently and economically. For almost a century SHUNK has been manufacturing a full line of fine cutting edges rolled from top-quality steel to fill any maintenance or construction need . . . whether it's gravel, dirt, shale, snow or rocks.

Original equipment manufacturers specify them because of their durability . . . contractors use them because of their dependability . . . distributors like to sell them because they're priced right and deliveries are prompt.

Write us for recommendations on the proper SHUNK blade for your job.



LABOR . . . Continued from page 168

Bailey (D-W.Va.) to postpone any action whatever on Taft-Hartley amendments this session;

Approved the amendment to relieve unions of responsibility for acts of their members solely because of membership in the union;

Turned down a proposal by Rep. Smith (R-Kan.) which would prohibit the union shop.

In the meantime, the Senate labor committee has closed hearings on changes to the labor law and will soon start voting on amendments.

#### The Teamsters

As the executive board of the Brotherhood of Teamsters turned down the AFL-CIO no-raiding pact, Dave Beck, president, made it clear that his union proposes to enter into direct negotiations with other unions to eliminate interunion disputes. As a starter, a special committee has been appointed, headed by administrative vicepresident Einar Mohn, to meet with building trades unions. Construction was given priority because serious jurisdictional disputes between teamsters and other trades have led to work stoppages and picket lines on a number of projects.

At the same time, Beck made it clear that the teamsters would oppose the arbitration plan (CM&E Oct. 1953, p. 142) to settle jurisdictional fights between AFL unions. This plan will be the major topic when building trades and other AFL officials sit down to a meeting next month in Chicago.

Contractors will benefit if, as Beck hopes, individual agreements can be worked out between international unions of the building tradés. However, if no progress is made, many observers forecast a period of jurisdictional warfare that will test the present machinery for handling jurisdictional disputes—the National Joint Board for the Settlement of Jurisdictional Disputes.

#### Correction

IN OUR EQUIPMENT development report on the new Felker tandem concrete saw rig, starting on p. 116 of the March issue, we stated each of the two saws was driven through a chain drive by a separate gas engine. The drive is actually by V-belt, not chain. Chalk up the error to lapse of memory by Ye Ed.

On everyday sawing . . . or on cutting tough metals, masonry or compositions

## "SKIL has the answer" to all sawing problems!



## ... with a Specialized Model and Blade or Disc for every job!

9 Extra-Heavy Duty SKIL Saws with hightorque worm drive. The favorite type for over 25 years on heavy ripping, tough metal and compositions that no other saw can handle. Blade diameters from 6° to 12".



3 Heavy Duty Low Cost SKIL Builders Saws with high blade speed. The new SKIL Builders Saws are ideal for quick cut-off work-for use with abrasive cut-off wheels. Many features found only in far costlier saws. Blade diameters: 6°, 714°, 814°.



98 Specially Designed SKIL Blodes and Abrasive Cut-off Wheels carried in stock by SKIL Branches and distributors. With the proper SKIL Saw, you can efficiently cut almost any material.

## We'll help you with your tough cutting problems

FREE! New SKIL Blade Selector to help you solve cutting problems in your plant. Quickly shows you the blade and SKIL Saw that will most efficiently cut practically every material used in production and plant maintenance. Ask your SKIL distributor for years or send coupon below.

FREE! Test Cutting Service on your problem materials. Send us samples of materials and details of any cutting problems in your plant involving production or maintenance. We'll test cut the material and let you know the SKIL Saw and blade or disc that will best answer your problem.



in Coupon New.



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## Rugged White "Ten-Wheelers"...

ON THE JOB day after day, they keep ready-mixed concrete on the move for W. E. Anderson Sons Co., Columbus, Ohio. These tandem-axle Whites with 4½-yard mixers have the stamina and durability to keep on tight schedules with the very minimum of downtime. The extra power of the Whites pays off first day in service and for more years!



## Sturdy White Tandem Dumps...

It's the same quality story in aggregate delivery and stock piling by W. E. ANDERSON SONS CO. White tandem axle dumpers with nine yard capacity. Plenty of White Mustang Power for the big loads and every unit sturdy and dependable without sacrificing payload.



## AND NOW THE NEW "CENTIPEDE"

for W. E. Anderson Sons Co., Columbus, Ohio Here's the newest of the famous Whites in readymix service-the White Steering Pusher "Centipede". Better weight distribution and flotation within state limits...maneuverability and road stability even on rugged terrain ... and economical Mustang power! Handles 6-yard mixer -24,000 lbs. payload and 100 gallons of water within state Get facts about this great line of Whites for your business. See your White Representative!



THE WHITE MOTOR COMPANY, Cleveland 1, Ohlo

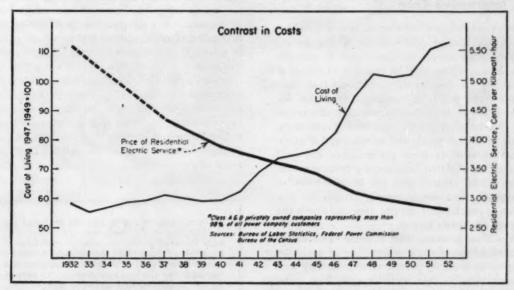
FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS.

## A 20-YEAR RECORD ...

# The Electric Power Companies' Case for Public Confidence

An economic study of the record of the investorowned electric power companies of the United States over the past twenty years underwrites their claim to public confidence today. A key factor of this record is set forth by the chart in the middle of this page. This shows that while the cost of living as a whole has almost doubled, the average price of electric energy for residential use in the United States has been cut in half. performance of these companies during World War II, J. A. Krug, Director of the Office of War Utilities, said, "Power has never been too little or too late." The same can be said for the entire period of the past twenty years.

To be ready with enough power—on time the electric power companies have expanded their production fourfold since 1933. This has required an investment of over \$17 billion in new



The average prices of industrial and commercial power also are much lower than they were twenty years ago.

Such a study confirms the record on other key accomplishments of the electric power companies during the past two decades.

They have not failed, either in peace or war, to meet the nation's rapidly expanding electric power requirements. In paying tribute to the

facilities. To raise the funds for this investment they have enlisted the participation of about 3 million direct stockholders. Through life insurance companies, banks and similar institutions, about 90 million Americans — more than half of the nation's total population — have become investors in electric power companies. By thus relying on private investment for their expansion, the power companies have provided their

(Continued on next page)

plant and operating equipment without burden on the taxpayer.

In addition, the investor-owned companies have paid about \$12 billion in taxes to various governments – national, state and local – over the past twenty years. Unlike government-owned and -operated systems, they have received no public subsidies. When taxes and subsidies are taken into account, the rates for electricity charged by the investor-owned companies have been as low as, or lower than, those charged by government-owned and -operated systems.

Many Americans do not appreciate the job that the power companies have done over the past two decades. That is due, in part, to the public memory of financial abuses by some utility holding companies during the 1920's. This memory obscures a clear and unprejudiced view of the progress since those days. And some of the all-out advocates of reliance on government rather than on regulated private enterprise for the development of our power resources do their best to keep this memory of the past alive in the present.

#### An Impressive Case

Some special cases of electric power development may involve problems for which the investor-owned companies are unable to provide full solutions. This may be true, for example, of some large multiple-purpose projects that combine electric power generation with related developments such as the improvement of navigation, flood control and the irrigation of arid lands. Some of the economic and administrative problems imposed by such projects are not well adapted to effective handling by private enterprise. Flood control and the improvement of navigation, for example, usually involve the provision of much costly service over and above the cost of producing power.

It is true, however, that in some cases development of the electric power side of multiple-purpose projects by private enterprise may well be more feasible than would appear from statements by some government power advocates. And the record indicates that even in those projects on which both the power generation and the other services are handled by public authority, it may well be desirable to have the investor-owned companies assume the transmission and distribution functions.

Our study of the record of the investor-owned and -operated companies over the past twenty

years has led us, of course, behind the statistics that bear on the wisdom of giving them a priority in the development of our power resources. It reveals that these enterprises are manned by people who, through lifetime experience, are peculiarly conversant with the needs of the communities they serve. They have given the consumer notably good service while conforming to standards set and enforced by public regulatory commissions. They have won the confidence of the investing public. By their nature and their experience they are competent to handle any power program that can be demonstrated to be economically sound.

#### The Paramount Public Interest

By their economic performance during the last twenty years, the electric power companies have earned the confidence of the public. By relying on these companies to meet its electric power requirements the public will fully protect its economic interest in ample and efficient service at fair prices.

That is where our study comes out. Our findings do not touch the political consideration that private operation of electric utilities under public regulation is a safeguard against further concentration of both political and economic power in a federal government that already commands too great a concentration. But if these findings make an economic case for preferring power development by tax-paying business as against power development by governmental agencies, they clear the way for an appeal to the paramount public interest in safeguarding our personal and political freedoms against the further encroachment of government.

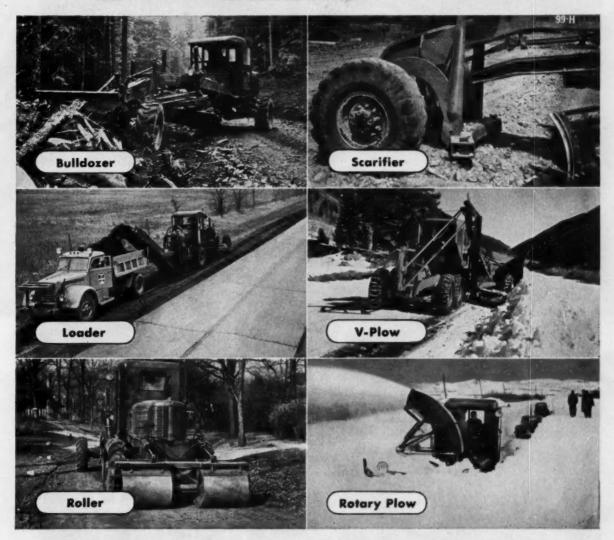
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Donald CMcGraw

McGRAW-HILL PUBLISHING COMPANY, INC.

## Only AUSTIN-WESTERN power graders can handle <u>All</u> these <u>profit-making</u> attachments



Thanks to exclusive All-Wheel Drive and All-Wheel Steer, Austin-Western Power Graders handle front and rear mounted attachments with maximum efficiency on jobs where ordinary graders—handicapped by a "dead" front end and lack of rear steer—would suffer through loss of traction or steering control.

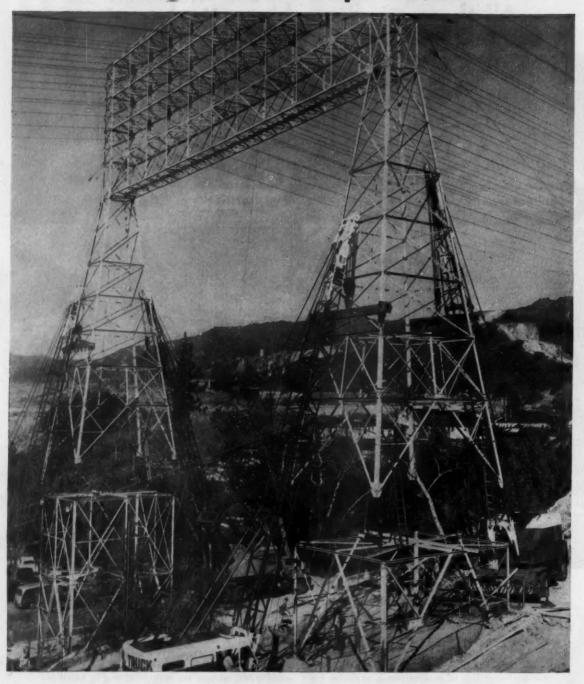
An unrivaled line of attachments is available for Austin-Western graders - versatile tools for those extra jobs which mean extra profits—each attachment designed for a type of work frequently done by a separate machine. No ordinary grader can handle ALL of these attachments... no ordinary grader can use ANY attachment as efficiently. Without attachments, the Austin-Western Power Grader works more hours each year than conventional graders...with attachments, its uses are multiplied and its value increased beyond that of any other grader.

## **Austin-Western**

Power Graders • Motor Sweepers Road Rollers • Hydraulic Cranes



## Four Cranes Hold Split Towers



LOOK AT THE PICTURE carefully. You will see four 550 P&H 35-ton cranes lifting two towers supporting a steel bridge with 33 ½-in. copper conductors of a 66,000-v electric line. Note that both towers are separated completely while workmen are fitting in 7-ft leg extensions to get greater clearance for the Colorado Freeway in

Eagle Rock, Calif., near Los Angeles.

The big cable bridge is 98 ft long, and the load on the cranes totaled 77,000 lb. Hoisting was done while the wires were "hot." Circuits were not de-energized to avoid interrupting important power services.

One tower was 130 ft high, the other, set on a hillside, was 116 ft high. The transmission line is the

property of the Southern California Edison Co., and the one-day job was directed for Edison by C. W. Sanders, Jordan Lummis and G. L. Matteucci. Owl Truck and Construction Co. of Compton was contractor for the big lifting job, with W. G. Hopcraft in charge of riggers and the four two-man crane crews who handled the ticklish project.

## Here's Why The MICHIGAN Tractor Shovel WILL DO MORE WORK FOR YOU!

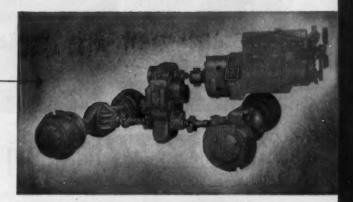


- \* This Power Train from engine to tires - engineered and manufactured by Clark
- \* CLARK TORQUE CONVERTER 3-to-1 multiplication factor provides maximum torque when it is needed. Precise control in inching and digging.
- \* CLARK POWER-SHIFT TRANSMISSION
  —no conventional clutch; four speeds forward
  and reverse—direction control by lever on the
  steering column.
- \* CLARK PLANETARY DRIVE AXLE—final reduction in the wheel reduces the torque load on all gears and shafts.

**RESULT** — easier operation, utmost accessibility and simplicity of servicing, highest efficiency in shovel handling.

ADD greater weight and more horsepower than any front-end loaders of comparable capacity, and you see why you can Move More with a MICHIGAN\*.

\*A Trademark of Clark Equipment Company



For full information send for the MICHIGAN Tractor Shovel Fact-Folia -specifications, action photos, magazine article. The coupon will bring your copy.





CLARK EQUIPMENT	COMPANY, Construction Machinery Division
380 Second Street, Benton	Harbor, Michigan, U. S. A.

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## for FASTER handling and placing of concrete!

THERE ARE MANY EXTRA ADVANTAGES for you in the completeness of the GAR-BRO line. Every item of equipment is matched to work together. For instance, the clearance of floor hoppers and portable hoppers matches the height of carts and Power-carts. Only Gar-Bro makes such a wide variety of types and sizes of concrete buckets. All have patented double clamshell gates . . . all have attachments . . . and all have the fittings for easy attaching.

Whether the placing job is deep down into the narrow confines between reinforcing steel, or 40 feet under water, or high on the 54th floor of a concrete building, Gar-Bro Concrete Handling Equipment can help you deliver and place concrete easier, faster and better.

See your Gar-Bro dealer and be sure to ask for your free copy of the Gar-Bro Manual and Concrete Equipment Handbook.

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GET THE FACTS! Write for your free copy of the new 56-page "Manual with Check List for Handling and Placing Concrete Efficiently," Includes tables, references, correct and incorrect methods, unusual jobs



### meet a man who can save you money!

Meet the wire rope man at your B. oderick & Bascom distributor. Here's a man, trained in helping you select the right wire rope for your equipment, who is ready at any time to answer your call for service.

#### HE'S READY TO SAVE YOU MONEY!

He's the man who is making the Yellow Strand Speedi-Service Plan work. This is the plan that registers your wire rope requirements. These records are kept up-to-date by your Broderick & Bascom distributor. When a line needs replacement, just phone your distributor and ask for the wire rope man. Tell him what line on what machine is needed. He'll consult his records to determine the

exact size, length, construction and lay of rope your machine requires.

Your order is taken from a stock of Yellow Strand that is controlled by the Speedi-Service records. You can always be sure of having the right rope available when you want it. The rope is on the way to you in a matter of minutes instead of hours.

This man can save you money by getting equipment back to work in the shortest possible time. He can eliminate costly record-keeping and he can give you longer rope life with Yellow Strand.

Call him at your Broderick & Bascom distributor or write direct to start your Yellow Strand Speedi-Service Plan.

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POP SAVINGS ... SAFETY ... SPEEDL-SERVICE

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Gentlemen:
I'm interested in saving money with Speedi-Service.
Send me literature.
Send me the name of my distributor.

Signed.



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For sure protection against cave-ins, injuries and costly re-digging, specify Simplex Trench Braces. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

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TEMPLETON, KENLY & COMPANY 2509 Gardner Road, Broadview, Illinois



THE MICHIGAN TRUCK-MOUNTED MODEL, T-24, enroute to a steel-handling assignment. Of 34-cu yd capacity, the new model soon to be available, is now being manufactured by Clark.



THE T-24 in action handling steel beams. Optional power steering is available. The chassis is powered by a heavy-duty 529-cu in. engine with 5 speeds forward.

## A Bigger Michigan by Clark

It's 3/4 yd, comes crawler- or truck-mounted

THE MICHIGAN LINE of excavators and cranes, acquired last year by Clark Equipment Co., now has two brand new additions—a crawler and truck-mounted ¾-cu, yd capacity power shovel. Michigan previously produced only ½- and %-yd. capacities.

Under development for the last 3 yr, the bigger Michigans embody new style cabs, and numerous mechanical innovations have been incorporated.

Available in two models, the C-24 is crawler-excavator and T-24 is a truck crane with 6x4 or 6x6



THIS IS THE CRAWLER EXCAVATOR Model C-24. Development program for this new unit started 3 yr ago and resulted in a completely new design in the 1/4-cu yd class.



NEW UNITS feature several innovations. The cab has been completely redesigned to give full visibility, including an overhead window to see high boom operations.

all-wheel drive.

The transmissions and powertakeoffs for the new shovels will be manufactured by Clark at Jackson, Mich.

Features of the new units are:

Cab—Better design gives full visibility. Overhead window permits operator better to see high boom operations. Cab is quieter.

Turntable base—One-piece steel casting with hinge pin and roller brackets cast integral. Six hook rollers mounted on anti-friction

bearings provide a 3-point mounting on the circle gear and a smooth easy swing.

Side frames—One piece steel sides assure better alignment of shafts and drums.

Primary drive—Reduction of power from the engine to main drive is through two sets of spiral bevel gears completely enclosed and running in oil.

Boom hoist—Independently operated worm gear boom hoist is standard equipment, is on the oper-

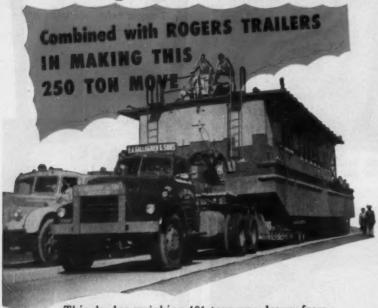


Pneumatic rollers 7 to 50 tons.

6100 S. LAMAR, DALLAS, TEXAS

E. GRACE MFG. CO.

### THE LIFT OF THE TIDE and Expert "Know-How"



This dredge weighing 181 tons was drawn from a creek at Repaupo, N. J., moved 5½ miles and launched in the Delaware River. Additional equipment, a total of 250 tons, was also moved in 20 loads.

A special ramp was built at the river, the dredge "winched" into position and the lift of the 6 foot tide used to float the dredge.

Two weeks were required for this entire operation. But the actual moving was done in one day on two Rogers 50-ton low bed trailers and two Rogers 75-ton dollies.

"KNOW HOW" based on long experience was displayed by E. A. Ganagher of Philadelphia in this unusual move. Apparently, too, they KNOW that Rogers equipment can't be beat for these difficult operations.

EXPERIENCE

PERFORMANCE Salls 'em

ROGERS BROS. CORP. ALBION. 220 Orchard Street

Export Office: 50 CHURCH ST., NEW YORK7, N.Y. U.S.A.

Cable Address: BROSITES



Divided bed, tilt deck trailer with gooseneck.

### A Bigger Michigan . . . Continued

ator's side, easily accessible for servicing and adjustment.

Fairlead-Completely new and redesigned fairlead of the revolving type with anti-friction bearings on the sheaves and trunnion.

Shafts and Drums-Hoist and crowd drums are mounted on the same shaft and actuated by air ram multiple-segment clutches. Each drum is provided with a 30-in. dia brake.

Controls-All shaft and drum clutch controls are air ram-operated, grouped for ease of operation.

Counterweights-Inside counterweights are easily removable. They are mounted on guide posts and may be raised or lowered by power from the crane mechanism.

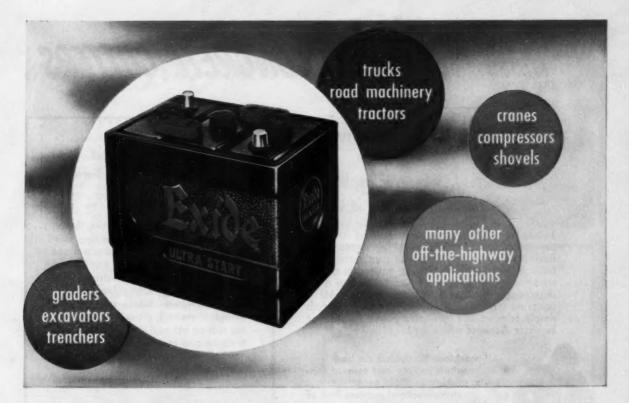
The truck is available with optional power steering. A feature is a large capacity enclosed dunnage compartment for equipment such as hooks and fall blocks. The chassis is powered by a heavy-duty 529-cu in. engine with 5 speeds forward and 2-speed transfer case. Axles are heavy-duty double reduction tandem gear with torque arm suspension and rocker beam mounting. Telescoping rear and center outriggers are standard equipment.

Car body, circle gear and roller paths are cast integral. Crawler drive gears are completely enclosed and run in oil. The crawler is equipped with automatic springloaded, self-locking brakes. Tracks feature a core type pad 24 in. wide with self-cleaning sprockets.

### Play Safe With Scaffolds

PILES OF BRICK, stone or other loose material should never be used by the workmen in place of scaffolds, nor should horses, scaffolds or platforms rest upon such piles, or be supported by them.

Carefully selected lumber should be set aside for use in the construction of scaffolds, and such lumber should not be used for other purposes. Painting the ends of these planks for easy identification will help keep them available for proper use. When not needed scaffold planks should be stored and protected from the weather in order to avoid warping, cracking and splitting.



### "This battery will outlast..."

You've been battered by battery claims. Now, let's look at some of the facts and features that make Exide Ultra Start Batteries outlast and outperform others under the toughest conditions:

**G.O.X.**—This new, superior active material increases capacity and starting power, particularly in zero weather.

**SILVIUM**—Exide's patented grid alloy resists a battery's most destructive enemy—grid corrosion caused by overcharging. Prolongs life.

PORMAX—Virtually indestructible separators are extremely resistant to heat and vibration. Will outlast the long-life Ultra Start plates.

In the laboratory, the Exide Ultra Start greatly exceeds the brutal SAE Overcharge Test standards . . . results show 360% to 520% of the established ratings. In actual operation, Exide Ultra Start Batteries are racking up new performance records—keeping their "wallop" on a steady, dependable basis month after month of their extra long life.

There are Exides to slash your battery costs . . . reduce your down time . . . for every heavy duty application—gas or diesel. Buy them from your nearest Exide Distributor. He is listed in the yellow pages of your phone directory.

Exide AUTOMOTIVE DIVISION
THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 2. Pa.

Exide Batteries of Canada, Limited, Toronto "Exide" and "ULTRA START" Reg. T.M.U.S. Pat. Off.



## these |



## TO CONCRETE CUTTERS

### For use in Highway construction Airports, Municipalities, Factories...wherever asphalt or cement concrete is used!

Felker DI-MET gives you the results of 30 years' experience in diamond sawing! These machines have been developed to answer contractors' specific requirements, combining maximum speed, maneuverability, ease of operation and high dependability. Abundantly powered, DI-MET concrete cutters not only handle all jobs with ample reserve, but this extra power insures far superior diamond wheel life!

All machines illustrated cut both asphalt paving and cement concrete, making possible neat, straight-edged patches free of break-out unevenness and roughness.

### Here's Where Di-Met Concrete Cutters Save Time, Cut Your Costs!

Cutting control joints, tranches, floors, curbs, ramps, sidewalks; laying new pipelines or repairing old pipelines under existing concrete, for underground telephone and electric service repairs; making traffic signal installations and repairs; taking concrete core samples; scoring, grooving, patching; for cutting off and slitting terra cotta, transite and concrete pipe; for maintaining bridges, tunnels, tubes, highways, airports, etc.

#### FELKER DI-MET MODEL 135

A low-cost machine for all run-of-the-mill concrete cutting jobs. New 4-wheel design. Uses 8" through 18" DI-MET diamond blades. Cuts to 3½" depth with 12" blade. Full 13.5 h.p. Wisconsin gasoline engine. Light... easy to handle. Husky single-end spindle mounted in Dodge S.C. self-aligning bearings. Arbor is 1¾" O.D. at blade, with keyway. Slotted blade collars insure powerful coolant ejection on blade rim. 12" split blade guard lifts, exposing wheel for close-up work. 18" guard available. Power feed optional.



A heavy-duty machine providing plenty of power for deep cutting, extra speed and long, economical life from your diamond wheels. Equipped with 13.5 h.p. Wisconsin engine driving 8" through 18" DI-MET diamond blades on double-end spindle. Cuts to 6%" depth with 18" blade. Hydraulically controlled down-feed eases blade into pavement eliminating sudden shocks and prolonging diamond wheel life. 15 gallon water tank. Also equipped with hose connection for external water supply. Removable tongue permits self-trailing. Equipped with pneumatic tires and slotted blade collars.



## make all jobs easier!

#### FELKER DI-MET MODEL 252

This heavy-duty machine features a power drive, making it self-propelling. Cutting speed is variable from a slow crawl to a fast walk...relieves operator fatigue... has doubled diamond wheel life in actual tests by eliminating human variations in rate of feed! Utilizes 13.5 h.p. Wisconsin engine, also available with 26 h.p. Kohler engine. Spindle is double-end for right or left hand use and handles 10" through 18" DI-MET diamond blades. Split-type blade guards are 14" and 18", instantly interchangeable for right or left hand wheel. Hydraulic down-feed eases entrance of blade into pavement. Built-in hydraulic jack lifts front end for attaching trailer hitch. Pneumatic tires. Steering control and hose connection for external water supply provided. Slotted blade collars furnished.

Model 252 AVAILABLE IN SEVERAL VARIATIONS This model may be purchased complete with all accessories including engine starter and generator, pressure pump, etc., or in various modifications down to the basic unit.



### FELKER DI-MET SPAN-SAW

A new multi-bladed machine for diamond-sawing control joints in new highway and airport concrete. Spans the concrete slab, riding either the header boards or concrete. Saws control joints at desired intervals-speeding work, cutting costs and minimizing manpower.

#### FELKER DI-MET SEGMENTED TYPE DIAMOND BLADES

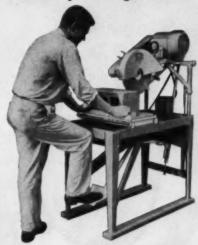


By far the preferred blade for all concrete and masonry sawing, resulting from 30 years intensive diamond abrasive wheel development. Sizes from 6" to 24" in diameter, with arbor holes to fit all standard machines and cut-off saws. TWO CONCRETE TYPES: STANDARD for hard, dense cured concrete. SPECIAL for green, uncured concrete and asphalt. Many variations in bond toughness available for each type insuring maximum life under your specific conditions.

#### Ask for recommendations!



### NOW-for Your **Masonry Cutting Needs**



### A new Felker DI-MET MASONRY SAW that sings with new features!

Cuts all types of masonry materials - cuts wet or dryl Step-cuts, through-cuts, skew-cuts with greatest ease! Universal—uses both ordinary abrasive wheels and diamond blades. 14" blade, 1" arbor—standard. Also handles 18" blade with special guard. Ball-bearing spindle operates at 2800 r.p.m. Arbor raises on vertical standard, permitting horizontal arbor position on any work size within machine capacity. Hydraulic retardant lowers head gradually. All adjustments made from operator's position. Husky 1½" h.p. motor provides extra power for all operations. Independent pump for wet cutting—no belt to remove! A better masonry saw for maintenance-free performance—lower operating cost—increased work capacity!



### FELKER MANUFACTURING CO.

**TORRANCE • CALIFORNIA** 

WORLD'S LARGEST AND OLDEST MANUFACTURER OF DIAMOND ABRASIVE CUT-OFF WHEELS AND MACHINES



#### TORQUE CONVERTER DRIVE

MORE EFFICIENCY — Engine operates at most efficient speeds — no laboring or stalling

LOWER MAINTENANCE - Oil cushion absorbs load shocks—protects vital parts EASIER OPERATION - Eliminates much gear-shifting and "clutching"

GREATER OUTPUT - Machine operates at highest speed in relation to load

development insures faster, lower-cost materials handling because output is increased up to 1/3 and maintenance is drastically reduced.

Combined with the 4-speed, full-reversing transmission, the Torque Converter provides an unlimited range of automatically selected speeds to meet the load and operating conditions. Parts breakage and maintenance are less because shock loads are absorbed.

Prove to yourself that this pioneer four-wheel-drive tractor-shovel, with torque converter, is the finest tractor-shovel available. Ask your "PAYLOADER" Distributor for a demonstration, or write The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Illinois.

YOU CAN'T COMPETE IF YOUR EQUIPMENT IS OBSOLETE



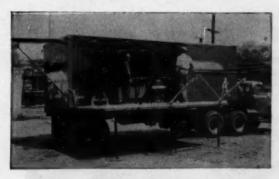
you can get big drill performance with the

## CHALLENGER Blast Hole Drill

HERE'S WHAT USERS SAY:

"Drilling cost per ton of ore broken reduced by two-thirds over wagon drills. Driller experience can further reduce to one-sixth of wagon drilling

"Punched down four 60' holes, bottoming at 4" dia., in one shift. What a drill!"



### SPECIAL DRILL AND STEEL SERVICE

The size of the Challenger Drill and the sectional steel used with it, makes necessary special drill and steel service which is provided by Joy. Service trucks, like the one shown here, make periodic visits in areas where Challenger Drills are operating. The operators of this "mobile shop" are experienced drill doctors who furnish complete drill steel service, bit sharpening service, drill inspection, and suggestions for use and application of the drill for best results.



Users' reports on early units show that you really get big drill performance with the Challenger Drill. It's a 514" hammer drill (not a piston drill) that drills 414" diameter holes through hardest rock to depths of 50' or more. This big drill performance calls for a 26' feed to cut the number of steel changes, and a self-propelled mounting. Tractor-mounted on rubber tires with a portable compressor to furnish air for drilling, the Joy Challenger is the biggest cost-cutting big drill for hard rock drilling. Check your needs . . . see if this big drill won't answer your problems. . Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.





WORLD'S LARGEST BUILDER OF CORE DRILLS, ROTARY BLAST HOLE DRILLS AND MOTORIZED DRILL RIGS

## CONSTRUCTION EQUIPMENT NEWS



### 32-Ton Easton Side-Dumper

The Easton model TD-1832H Side-Dump Trailer has been engineered to work with the Caterpillar DW-20 tractor. Big single tires, low center of gravity and outboard-mounted hydraulic jacks assure good lateral stability even when dumping on the run. It dumps only to one side, but interchangeable mountings permit direction of dump to be reversed. Maximum dumping angle is 50 deg. Trailer frame is of the gooseneck, torque-beam type, open front and rear for self-cleaning of spilled materials.—Easton Car and Construction Co., Easton, Pa.



### Portable Band Saw

Here's a completely portable electric metal-cutting band saw that weighs only 16 lb. Scarcely larger than a hand hack saw, it is said to be 15 times faster. Stock cutting capacity is up to 3¼ to 4¼ in. The unit is 19½ in. long.—Porter-Cable Machine Co., Syracuse, N. Y.



### Cut 'Em Up and Sell 'Em Proves Profitable

The use of Skil model 825 portable electric and model 125 electric chain saws to dismantle old housing units has proved to save up to 60% over other methods attempted by Readi Bilt Homes Company, Everett, Wash. Buyers can purchase whatever portion of the dismantled homes they want and have the sawed units delivered to the new site.—Skil Corp., Chicago 30, III.



Self-Propelled, Portable Service Station

This small self-propelled, powered service station for maintenance of heavy equipment provides a low-cost method, insures more timely service and avoids duplication of equipment. Powered with a 6-hp Wisconsin engine with either rope or electric starting, the unit is only 31 in. wide. It'll travel over rough ground.—The Prime-Mover Co., Muscatine, Iowa

### On-the-Job Previews of Machinery, Tools and Equipment



### **Experimental 4-Wheel Euclid Scraper**

Euclid has two experimental 4-wheel scrapers on construction projects in the South that are being watched with interest. Rated at 18 cu yd, struck, the 4 wheels are driven by a 300-hp diesel engine mounted behind the scraper bowl. The engine power is transmitted to both axles through a drive shaft and universal joints mounted along one side of the scraper bowl. The unit having no tractor permits short turns. The scraper has

been tested with a hydraulically controlled bulldozer blade which is removable for high-speed haulage. Ohio-Turnpike projects and coal stock piles indicate this experimental unit has the ability to self-load in many types of materials. Euclid does not plan to produce this unit until all field tests have been completed, probably this year.—Euclid Div., General Motors Corp., Cleveland, Ohio



### Hydraulic Loader-Platform

The American 4-Way hydraulic loader for use with the Fordson Major Tractor will permit work heights up to 25 ft. The loader can be equipped with 9 attachments to do a wide variety of jobs. It is claimed the loading unit can be mounted or dismounted in 15 min using only six bolts.—American Road Equipment Co., Omaha, Neb.



### Flanged Hauling Yoke for Tractors

A new flanged hauling yoke permits changing the draft beam on Southwest's Compaction Roller to match the Cat DW-21 tractor, standard wheel- or track-type tractors. This unit has 4 weigh boxes, which when filled with any material, attains a single tire load as high as 53,000 lb.—Southwest Welding & Mfg. Co., Alhambra, Calif.



### UNIT CRANE & SHOVEL CORPORATION

6305 WEST BURNHAM STREET

MILWAUKEE 14. WISCONSIN, U.S.A



1/2 or 3/4 YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



EQUIPMENT NEWS ... Continued Loaders



BIGGER BUCKETS — Increased bucket capacity with widths up to 16 in. are now available for Parsons Model 88 pneumatic-tire mounted Trenchmobile. Bucket sizes are now available in three widths—8, 12 and 16 in. Other recent improvements are hydraulic boom hoist with positive down crowd and three-point suspension of the wheels from the Trenchmobile frame—Parsons Co., Newton, Iowa



BUCKET ROCKING ACTION—The LeRoi Transo TLF-150 slides under heavy loads with a rocking, spading action. The action is the result of the rocking motion of the hydraulic cylinders which are placed well back of the dirt agitating area on the machines. The unit ranges in size from ½- to 1½-cu yd capacity. The units also feature torque converter, power steering and reversing planetary transmission as standard equipment.—LeRoi Co., Milwaukee, Wis.



MOVABLE LOADING DOCK—The Penco Magnesium Yard Ramp is a movable loading dock that can be placed where and when you want it by one man. It comes in two sizes, 60 and 70 in. wide, and in six capacities from 4,000 to 16,000 lb, with

(Continued on page 192)

## 620,000 TOUGH MILES A MONTH

C. H. Crutcher, Operating Manager, keeps his finger on the vast operation of Healzer Cartage Company from his office in Kansas City, Missouri.



Oil for the Engines of Commerce-

PHILLIPS 66 HEAVY DUTY MOTOR OIL

April 1954 — Construction METHODS and Equipment — Page 191



Powered equipment lasts longer and requires fewer repairs when a definite program of protective maintenance is followed. It pays to know WHEN it's time to change oil, lubricate, inspect, overhaul, etc. The HOBBS HOUR METER tells you when.

#### NOT A REVOLUTION COUNTER

. . . but an electric timing instrument that shows HOURS and MINUTES of engine operation. Provides the accuracy that's important for genuinely effective maintenance. No revolution counter can do the job!

#### APPROVED BY LEADING MANUFACTURERS

Installed as original equipment or recommended as an approved accessory by leading construction equipment manufacturers. Built for rough going . . . easy to install. Get full information from your factory branch, representative or distributor, or WRITE:

John W. Hobbs Corporation
2070 YALE BLVD. SPRINGFIELD, ILLINOIS

### **BLAW-KNOX**

## CONCRETE

speed work cut concrete placing costs



WHETHER you're placing fluid or dry concrete, big aggregate or normal stone, any specification—there's a size and type of Blaw-Knox Concrete Bucket to suit your needs:

Blaw-Knox Roller Gate Controllable Discharge Concrete Buckets for normal or low slump concrete for general construction work.

Blaw-Knox CAC Concrete Buckets with air operated clam gates for low slump mass concrete specifications.

Also, Tremie type buckets for placing concrete under water. See your nearest Blaw-Knox distributor for details.

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
Pittsburgh 38, Pa.

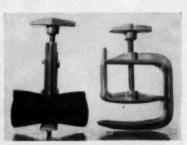
## **BLAW-KNOX**

(Continued from page 190)

either fixed wheels or hydraulic lift. It's adjustable within a 38- to 55-in. range.—Penco Engineering Co., 25 California St., San Francisco 11, Calif.

BIG-CAPACITY LOADER—A 12-cu ft loader, Model 20, joins the Baker-Lull Shoveloader line of materials handling equipment. It will lift 1,500 lb of bulk material to 7-ft heights and has a 90-in. turning radius for close inside and outside work. It can be switched from loader bucket to lift forks, or special bucket and crane hook. It is a front-wheel drive and has 4 forward speeds and one reverse speed. Top speed is 14 mph.—The Baker-Lull Corp., 314 W. 90th St., Minneapolis 20, Minn.

### **Small Tools**



SIMPLE HOSE VALVE — Where hose is used for the transfer of corrosive liquids, this Camac Hose Valve meets the need for a simple and inexpensive method. Because of its contoured design, it will give a complete shut-off against pressures up to 100 psi. One-hand operation is possible and the valve may be put on or taken off hose runs without disturbing connections. It's made of aluminum and bronze and is suitable for use with hose from 1 to 2½ ID.—Carl Buck & Associates, Essex Fells, N. J.



AIR TOOL—Caldwell hammers have this new air tool useful for drilling, chipping, trimming, scaling, sealing and all-around general application. The hammer is small, measuring only 9¾ in. in length and has a 1½-in. barrel. Comes in two handle styles, pistol-type and the knobtype. Weighs only 5 lb. The hammer is automatic in that it operates when

(Continued on page 196)





WITH LINCOLN "SHIELD-ARC" YOU

## PICK EXACT ARC to cut welding costs

Here's why more Lincoln SA-200 welders are in use today than any other engine-driven welder in the world:

FAST, SIMPLE DUAL CONTROL assures right type arc and right arc intensity for every job. This means that operator can suit the arc to the job every time for flat, vertical or overhead welding.

COMPACT DESIGN provides long, dependable service, low-cost operation, highest quality welding.

SEE FOR YOURSELF. Compare "Shield-Arc's" money saving features and low cost. Bulletin 1337, giving cost-cutting details, is available by writing on your letterhead.

# "SHIELD-ARC" for low cost welding

ON MULTI-STORY FRAMEWORK



Completing column splices on all-welded multi-story structure. Welds are  $\frac{1}{2}$  fillets on each side of plate made with  $\frac{1}{2}$  "Fleetweld 5".

#### ON BRIDGE CONSTRUCTION



Speeds welding on bridge construction using 20 "Shield-Arc" engine driven welders with 3/4" "Fleetweld" electrodes.

#### ON WAREHOUSE STRUCTURE



Welding vertically on inside flange of structural framework for 1200 ft. long building. Vertical joints were completed with only four passes with 3/6" "Fleetweld" electrodes and "Shield-Arc" machines.

### THE LINCOLN ELECTRIC COMPANY

CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT



## 2 units do the work of 3

With two General Motors Diesel engines—one pulling and the other pushing—two 24-yard (heaped rating) twin-engine Euclid scrapers hauled as much yardage as three single-engine units did on this 1½-million-yard flood control project. What's more, the GM Diesel-powered "Eucs" scraped 40 tons in a single pass without a pusher.

Delivering power at every piston downstroke, quick-acting GM 2-cycle Diesels respond faster when the blade hits the dirt —accelerate quicker for faster runs to the spreading site. They start at the push of a button even in coldest weather—deliver thousands of hours of trouble-free operation. Clean, simple design makes maintenance easy and many moving parts can be interchanged between all Series 71 Models. When parts are needed, they're quickly available at low cost from your GM Diesel Distributor. For full details on GM Diesel power for your job, call him in today.

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines... 16 to 275 H. P. Multiple Units... Up to 840 H. P.

## The UNIVERSAL 293Q TWINDUAL PACEMAKER



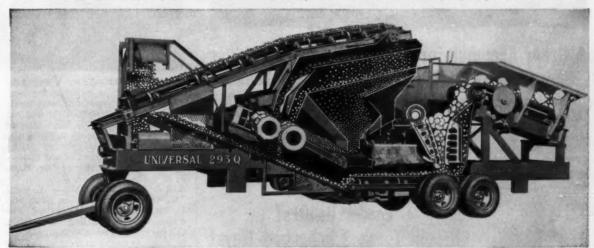
gives you these

## **EXCLUSIVE**

### **Profit-Making Advantages**

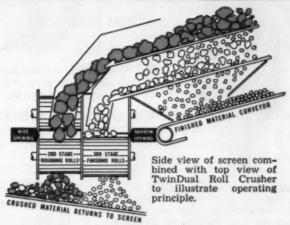
- \* TwinDual Roll Crusher
- \* Three separate crushing operations
- \* Primary and Secondary on single truck
- \* Only one plant to move instead of two
- \* Only one power unit to service
- \* Flexibility for rock or gravel
- \* 20% greater screening efficiency
- Better quality finished aggregate
- Lower initial cost lower maintenance cost
- \* Top production

Jaw crusher and Apron feeder are mounted on separate skid frame to meet highway weight limits.



PIT OR QUARRY — rock or gravel. Name your operation. The TwinDual Pacemaker sets new standards for profitable hour after hour tonnage at low cost per ton. Three crushing operations with Universal's exclusive TwinDual Method provide top capacity, divide the load between three crushing stages. Permit a more favorable ratio of reduction resulting in longer crusher life, less maintenance and better quality finished product.

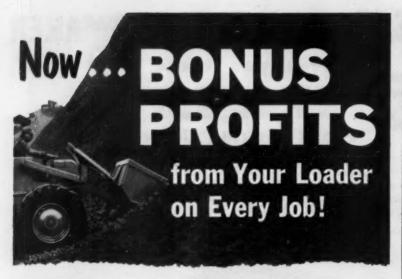
There is much more to the profitable TwinDual Story. Facts are yours for the asking. Bulletins U520 and U501 will give you detailed information.



### UNIVERSAL ENGINEERING CORPORATION subsidiary of PETTIBONE MULLIKEN CORP.

327 8th Street, Cedar Rapids, Iowa Phone 7105 4700 W. Division St., Chicago 51, Illinois Phone SPaulding 2-9300



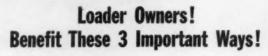


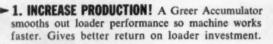
### A Greer Accumulator Assures Faster, Smoother Operation by Reducing Shock on Your Loader

Hydraulic shock and vibration on bucket loaders can make the difference between profit and loss on your construction jobs. Shock usually means increased maintenance, slower loader operation, and operator fatigue.

But now — a simple, low-cost solution to this problem is the Greer Accumulator. This revolutionary newtype shock-absorber takes the bounce and jounce out of your loader.

Actual field tests, successfully demonstrated to leading manufacturers and dealers, have proven the superiority of bucket loaders with a Greer Accumulator over all others.





➤ 2. CUT DOWNTIME! A Greer Accumulator absorbs shock that can damage parts and cause structural strain. Less maintenance means less costly downtime.

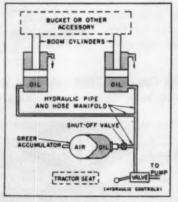
3. STEP UP OPERATOR OUTPUT! A Greer Accumulator frees operator from tiring effects of jolts and vibration. Lets him work at his full capacity.

U.S. PATS, UNDER CLAER LICE

How the Greer Accumulator Works. The Greer Accumulator, above, is a steel shell encasing a rubber bag pre-charged with gas. Shock forces hydraulic fluid into shell compressing bag. Thus jolts are absorbed by the accumulator instead of jarring operator and machine.

Simple Installation. Typical loader circuit diagram is shown on right. A Greer Accumulator Tractor Kit only requires a hose and T-connection installed by any mechanic between the control valve and lift cylinders.

Act New! For complete details on how the Greer Accumulator adds bonus profits to your construction jobs, see your equipment dealer, or write Greer today for more information.



GREER HYDRAULICS INC. • 454 EIGHTEENTH STREET • BROOKLYN 15, NEW YORK

(Continued from page 192)
pressed into contact with the work
and stops when withdrawn. Has a
push-pull quick change chuck.—The
Burgess Thomas Co., Bloomfield, N. J.

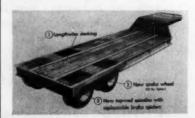
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NEW CUTTER—This heavy-duty portable cutter is suitable for contractors. It's all-steel with heat-treated tubular steel handles. It will cut reinforcing rods up to ½-in. dia and wire rope and cable up to ¾-in. dia. Models are also available for cutting soft bolts and medium hard rods.—H. K. Porter, Inc., Somerville, Mass.

AREA CALCULATOR — A good time-saver is the Morton Area and Volume Calculator. Operating like a slide rule, but reading like a table, this pocket-size calculator gives areas or volumes to the nearest sq ft. The user can instantly and accurately obtain the areas of walls, ceilings, floors and windows. Five different scales appearing along the edges make the calculator additionally useful. Price is \$4.75 in a leatherette case.—Morton Engineering Service, 609 Bangor Rd., Lawrence, Mich.

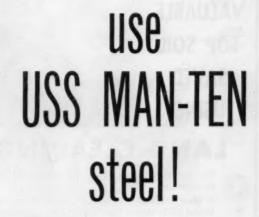
### **Trailers**



HEAVY-DUTY LOWBED — Major improvements for bettering the performance of heavy-duty lowbed trailers have been announced by Lacrosse Trailer Corp. To give extra strength and durability in end loading, the model DF6T tandem-axle trailers are now being supplied with tough oak decking running parallel with the trailer length. Decking has been recessed into trailer frame to

(Continued on page 198)

## How to put More bite in buckets ...



Whatever the job bucket-type earth-moving equipment is called on to do, whether it's stripping earth, loading gravel or chewing out rock, the business end of the machine—the bucket—really takes a beating. That's why it's necessary to make it of a steel that has proved it can handle the job.

And that's why Pettibone-Mulliken Corporation, Chicago, Ill., has chosen USS Man-Ten High Strength Steel to give added strength, rigidity and wear resistance to the buckets on their equipment.

For example, on the large dipper, the body plates are made entirely of USS Man-Ten steel; on their Speed Loader the teeth are edged with Man-Ten steel; and on the Hi-Lift the whole bucket is built of USS Man-Ten steel.

And why do Man-Ten, and other USS High Strength Steels, Cor-Ten and Tri-Ten, assure fewer breakdowns, longer service, lower maintenance and replacements from all kinds of earth-moving equipment, even under tough operating conditions?

Here's why. These high strength steels have a yield point 50% higher than ordinary structural carbon

steel and afford high resistance to fatigue, abrasion and impact. You can use Man-Ten, Cor-Ten, and Tri-Ten steels to build maximum strength and toughness into vital parts ordinarily prone to failure. With them you can materially increase the strength of parts without increasing their weight. Or you can use these steels in lighter sections and reduce weight without reducing strength or stamina. In the latter case a substantial saving in steel will result.

Contact our nearest office and let us show you exactly how you can apply USS High Strength Steels to make your equipment last longer. For 20 years our engineers have cooperated with manufacturers of the best construction equipment in applying these steels.

UNITED STATES STEEL CORPORATION, PITTSBURGH - AMERICAN STEEL & WIRE DIVISION, CLEVELAND - COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH - TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. - UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
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**USS HIGH STRENGTH STEELS** 



4-05

### VALUABLE TOP SOIL SAVED USING



### LAND-CLEARING RAKE

- On gravel pit operations the saving of loam is of paramount importance.
- A New England Contractor solves this problem with a Rockland,
   Model RF-2, Heavy Duty Land Clearing Rake mounted on his Dozer
- Shovel. Five acres of rough land are easily cleared in an eight-hour day. With 18" of penetration the Rockland Model RF-2 clears trees,
- rocks, brush and roots in a single pass, sifting out the dirt as the
- There is a Rockland Rake to speed every clearing project. Three models and eight interchangeable, adjustable tooth designs for all
  - Call or write today for the name of your dealer
    - ROCKLAND ALLIED EQUIPMENT CORP.
    - HARBORSIDE PARK PROVIDENCE 5, RHODE ISLAND
      - Tel.: Williams 1-5400



(Continued from page 196)

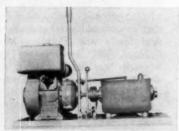
give much lower loading height. Also developed has been a new tapered automotive-type spindle with bolt-on-casting which permits low-cost replacement of brake spiders. The spoke wheel design has been improved which saves 30 lb deadweight per wheel. The trailers are 120 lb lighter than before.—LaCrosse Trailer Corp., LaCrosse, Wis.

NEW DUMP TRAILER—Fruehauf has introduced a new trailer unit for hauling materials that comes in single and tandem axles with 10- and 14-yd capacity. The bodies are high tensile steel and are ribbed and braced vertically by trianguler pressed steel posts. The dump gates are of sand-tight construction and are flanged and reinforced with steel channels. Separate trip mechanism is provided on the gates of each hopper.—Fruehauf Trailer Co., Detroit, Mich.



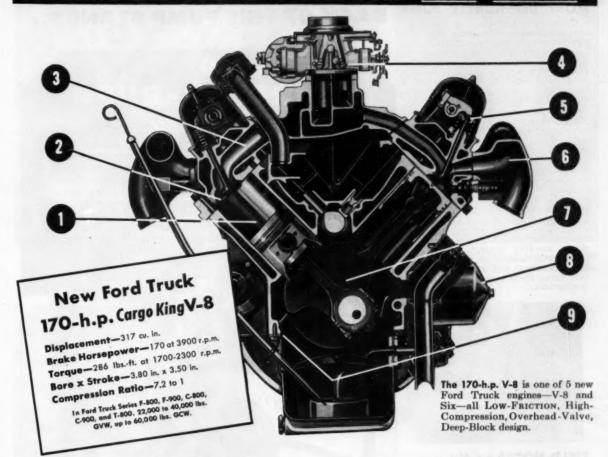
10-TON CAPACITY—Called Tilt-Top, this platform trailer has a capacity of 10 tons. It has a walking-beam member in the tandem-axle assembly which is said to provide rugged support for heavy loads. It's 76 in. wide, 16 ft long and has a low 25-in. height at level position. Weight 3,800 lb.—Miller Research Engineers, 430 S. 92nd St., Milwaukee 14, Wis.

#### **Transmissions**



PORTABLE UNIT—A portable integral power transmission unit which can be picked up and moved anywhere is expected to have a wide variety of application. A Briggs & Stratton 5-hp engine with a 6:1 reduction is connected to an oil tight transmission containing two Maxitorq disk clutches in line on a single shaft for forward and reverse drive. The transmission is 2:1 reduction and has a brake and a shifting lever. The entire unit, weighing 186 lb, is mounted on a framed steel base 38% in. in length with four studs for locking in position. The transmis-

(Continued on page 202)



## Up to 41% more power per cubic inch -than other truck engines in its class!

Here's why the <u>Cargo King V-8 gives</u> you power with <u>economy...the No. 1</u> saving in Ford Triple Economy!

- 1. Short-Stroke power—In the new Cargo King V-8, short-stroke design reduces piston travel as much as 34%. This cuts wear, repair costs, and internal friction losses... releases more "useful" power, saves gas. Cylinder and combustion chamber design permits larger intake and exhaust valves for more efficient fuel use, less dissipation of heat to cooling system. More energy per pound of fuel is converted into usable, load-moving power.
- 2. High-Turbulence combustion chambers are wedge-shaped to create high turbulence, give more efficient fuel-air combustion without pre-ignition.
- 3. Short-Reach intake manifold is two manifolds in one single casting. Car-

buretor mounted directly to manifold allows short passages, delivers uniform fuel charge to all cylinders for greatest power, easy starting.

- **4.** Exclusive de-popper valve on dual concentric carburetor eliminates backfiring when decelerating.
- 5. Free-turn valves rotate freely for self-cleaning action, better seating, minimize valve warpage, wear and sticking.
- **6.** Ram's Horn exhaust manifold improves breathing efficiency of new Cargo King by scavenging exhaust gases faster.
- 7. Precision-molded alloy iron crankshaft is a Ford exclusive. Permits more rigidity in design, with three times better self-damping.
- **8.** Full-Flow oil filter cleans all oil before it reaches bearing surfaces, reduces cylinder wall, piston ring and bearing wear. Replaceable cartridge type.

9. Deep-skirt crankcase extends 2¾ "
below center of crankshaft for greater rigidity to resist distortion, provides maintenance of bearing alignment for long
life and smooth engine performance.



- 1. New Gas-Saving Power
- 2. New Driver-Saving Ease
- 3. New Money-Saving Capacities

FORD TRIPLE TRUCKS

For complete information, see your Ford Dealer, today, or write: FORD Division, FORD MOTOR CO., Dept. T-9, Box 658, Dearborn, Michigan.

### CONTRACTORS LOOK FOR MOST DEPENDABLE PUMP

Contractors are quick to recognize the advantages of having the best equipment possible on construction jobs. Any saving of time in completing a contract is a saving in man hours and also frees his equipment for the next job. Dependable pumps are a necessity on any job that involves drainage or the movement of water.

The Gorman-Rupp Company of Mansfield, Ohio, specializing in pumps only, guarantees that their pumps will out-perform any pump of comparable size and type on the market.

These self - priming centrifugal pumps have long led the field in performance and dependability. The new Gorman-Rupps are the result of years of study and research in the field and in the laboratory.

Gorman-Rupp blue pumps are a common sight on tough pumping jobs everywhere. Their greater capacity when working against high heads, their great simplicity, their trouble-free operation and rugged construction make them a great favorite with contractors.



### FIELD NOTES on the GORMAN-RUPP DIAPHRAGM PUMP in a SLAUGHTER HOUSE

Before the men at a Berlin Heights slaughter house heard about the Gorman-Rupp diaphragm pump, they used to flip a coin to decide which unfortunate individual got the repulsive job of cleaning out the pit into which all of the blood and other waste matter of the slaughter house drained.

The pit was about 8 feet square and 10 feet deep. The liquid was to be pumped into a storage tank which at the time the pump was installed was in the construction stage. This tank would be placed about 30 feet from the pit. The Gorman-Rupp 3D-8R6 diaphragm pump was placed at the side of the pit, making a 10 foot suction lift and a 30 foot discharge.

In order to prove the Gorman-Rupp diaphragm pump's ability to pump the liquid, the discharge hose was curled around and back into the pit. The diaphragm pump handled the liquid and waste materials smoothly, easily, and quickly.

The unit is self-priming and required no attention except supplying of fuel and starting or stopping.

THE GORMAN-RUPP COMPANY.

## BACK OF THIS PUMP STANDS ..

## GORMAN-RUPP Guarantee

Our distributors are authorized to put a Gorman-Rupp Contractors' Pump on any pumping job, any time, anywhere, alongside any other make pump, size for size. The Gorman-Rupp pump is guaranteed to pump more dirty water more hours, using less gasoline and to prime quicker than any other self-priming pump. If it isn't the best all around pump, our distributor will accept the return of the Gorman-Rupp pump and pay the user any installation expense incurred.



Designed by experienced pump engineers, built by expert craftsmen, thoroughly tested in the factory and proven in the field.

The Gorman-Rupp is built for long, hard service. The greater capacity when working against high heads is most important. Streamlined inside, no by-passes or valves, no efficiency lost in pumping and a minimum of maintenance insures against loss of time and results in greater profit to the contractor.

Ask for Contractors' Pump Bulletin No.4-CP-11 GORMAN-RUPP 125 M PUMP



THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO



Field assembly of Monotube piles is quickly and easily accomplished using a "come-along" with two cable chokers.



Driven pile being cut off at proper height. Use of cut-off sections as extensions minimizes waste.



Welding extension to driven base section of pile on right while driving of pile on left continues. No lost time.

### How MONOTUBE PILES

meet the need for

### **VARIATION IN DRIVEN LENGTHS**

UNLESS you've already had first-hand experience with Monotube piles, you might be amazed at how their "easy field extendibility" pays off. Engineers and contractors are taking advantage of it on job after job . . .

Many contractors set up a simple welding rack to do their own field assembly right on the job, thereby furnishing the driver with one-piece piles to approximate required length.

Another procedure is to weld on extensions as driving progresses. While one pile is being extended, driving continues on an adjacent pile. No lost time.

Such practices are completely practical with Monotubes because they combine light weight and easy handling with cold-rolled high strength. Weldsplicing goes easy and fast. No difficult welding operations.

Get the facts on *all* cost-important Monotube features. Write to The Union Metal Manufacturing Co., Canton 5, Ohio.

Monotube Foundation Piles

UNION METAL



### Resurface with the

various bituminous materials including tars, cutback asphalts, road oils and emulsions. Road speeds up to 25 mph make possible quick moves

of condinat no other
Standard and heavy duty models for all types of resurfacing jobs and all kinds of operating conditions.

See your local H&B dealer, or write for Bulletin MP-49.

Moto-Paver speeds the resurfacing job—and cuts the cost. Savings up to 50% over other methods have been reported. Moto-Paver performance records—under all kinds of conditions—prove conclusively that no other method or machine produces comparable

results at comparable cost.

Moto-Paver uses beach sand, gravel,
crushed stone or slag aggregates and

### PORTABLE DRYER For Use with Moto-Paver

This portable dryer is especially adapted for use with the Moto-Paver, to give protection against weather hozards, also to permit use of heavier asphalts and oils, it is equipped with a gas engine and low-pressure oil burners—and requires no boiler. Hinge jack legs eliminate the necessity for foundations or cribbing. Semi-trailer arrangement provides maximum portability.



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### YOU'LL SAVE TIME AND EQUIPMENT with a



MODEL GXTT-14 THRU 22-TON CAPACITIES . . . Gosseneck type tilting platform cargo carrier equipped with two double-acting hydraulic cylinders cushion trailer platform when tilted, with er without load. Saves time-saves equipment-one-man operation. Exclusive "TRANSPORT" tandem axle assembly gives both lengthwise and crosswise oscillation.

WRITE FOR COMPLETE



(Continued from page 198)

sion can be used as a power unit, a winch, portable hoist, tugger or a transmission element for machine tools.—Soilaire Industries, 1200 Second Ave., S., Minneapolis, Minn.

2

### Miscellaneous



NEW DESIGN ON WELLPOINT-The Freeflow Wellpoint is claimed to be of original design, dependable, high capacity and long service with little maintenance. A no-rusting feature is possible because the screen assembly has no contact with the inner pipe. The screen assembly is a ruggedly constructed, self-con-tained unit consisting of a fine filtering wire cloth held rigidly in place between the inner slotted brass tube and outside perforated brass jacket. No internal supports of the screen assembly are necessary to withstand normal lateral pressures encountered in wellpoint work. When pumping, the fine inner mesh screen cannot pull away from the outer perforated brass screen to permit entrance of sand or silt.-Foundation Equipment Corp., Long Island, N. Y. and Chicago, Ili.



RUBBER COMPOUND—PR-395-HT is a new Thiokol base compound that offers excellent qualities as both a sealer and expansion joint. It's used with PR-1090 Primer and achieves an unusually strong bond to most materials. The primer has great penetrating qualities and forms a deep waterproof barrier that prevents migration of moisture to the sealed surface. Application is done with a spatula or extrusion gun.—Products Research Co., 3126 Los Feliz Blvd., Los Angeles, Calif.

ROTARY CUTTER—The new Dearborn Rotary Cutter is a heavy-duty, 5-ft rotary blade mower suitable for clearing underbrush. It shreds as well as cuts, so grasses are not smothered by weeds and brush. The

(Continued on page 204)



12

Has traction and flotation to work right up on the pile.



Stockpiles coal, sand, aggregate. Excavates, fills, levels. Compact - for work in limited areas.



ground with 16,200 lb. weight.



Backfills ditches, packs and levels Cleans up rubble with one-cu. yd. tractor-width bucket.



manpower and need for other fills, covers, levels. equipment.



Lifts material where needed. Saves Does sanitary fill work — digs,



hauling.



Does drawbar work scraping . . . Landscapes, grades or slopes lawn areas around building projects.

### TEN QUICK-CHANGE ATTACHMENTS ADD TO HD-5G VERSATILITY

Bulldozer Narrow Bucket Rock Bucket Crane Hook Light Material Bucket Trench Hoe Lift Fork Tine Fork Rock Fork Ripper

### ALLIS-CHALMERS HD-5G

## lways Busy...

### because it does so many jobs so well!

Busy equipment is profitable equipment. And thousands of owners are learning every day the year around that there's no more profitable machine on their jobs than the one-yard Allis-Chalmers HD-5G Tractor Shovel.



Larger size Allis-Chalmers tractors with shovels and other quick-change attachments offer the same wide utility, the same outstanding performing ability as the popular HD-5G. Choose the one that fits your needs.

I-YD. HD-5G 40.26 drawbar hp.

Dumping height\*

2-YD. HD-96

72 drawbar hp.

Dumping height\* 11 ft., 4 in.

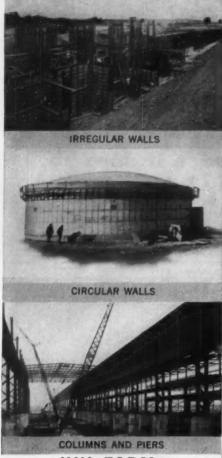
9 ft., 1/4 in. \*Height of bucket hinge 3-YD. HD-ISG

109 drawbar hp. Dumping height\* 12 ft., 8 in.

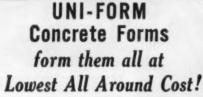
4-YD. HD-20G

175 net engine hp. Torque Converter Drive Dumping height\* 13 ft., 5 in.

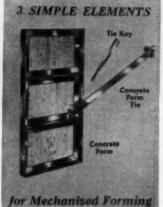
TRACTOR DIVISION MILWAUKEE



## **UNI-FORM** Concrete **Forms** Form Anything!



- Fast, mechanical assembly form more contact area per man hour
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- One side alignment and bracing saves up to 50% labor and lumber



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(Continued from page 202)

cutter is lifted and lowered by Ford tractor hydraulic control. Weight is 653 lb. Two hardened steel alloy blades, mounted on a central carrier are driven by the tractor power takeoff through a universal drive. A slip clutch protects both implement and tractor and eliminates shear pins. A gage wheel with puncture-proof tire provides a positive cutting height range of from 2 to 10 in.-Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.



**HEAVY-DUTY MAGNETO-More** compact and more powerful-these are two main features of a new heavy-duty magneto just announced by Bosch. Designated as MRF, this new magneto is intended for heavyduty service and although only of medium size, has greater electrical output than larger heavy-duty types. It is said to be ideal for use on compressors, arc welders, concrete mixers, cranes, derricks, oil-well drilling equipment, hoists, graders, road graders, shovels and tractors. The secret of the magneto's stepped-up electrical output lies mainly in the use of more powerful Alnico magnet material .- American Bosch Corp., Springfield, Mass.

ALL-PURPOSE DIGGER - The Acker digger is ideal for speedy digging of holes for setting telephone poles, fencing and guard rails. With a standard spiral auger head, the digger can bore holes up to 20-in. dia and to depths of 10 ft. By the use of sectional, continuous flight augers, depths down to 75 ft can be

(Continued on page 206)

## WHERE EXPLOSIVES RESEARCH PAYS OFF



About 487,000,000 tons of coal were mined last year to provide fuel for America's electric utilities, coke ovens for producing steel and cement, and railroads. Mining that tonnage economically and efficiently required nearly a quarter billion pounds of industrial explosives.

Illustrated is one example of how explosives research pays off. The proper use of the right type of permissible explosive brought down a high percentage of lump, ready to be used with a minimum of processing.

Such results come from Hercules' continuous explosives research and extensive knowledge of field conditions. These are important factors in the economical and efficient blasting of coal, metals and nonmetallics, quarrying, and construction. Our technical representatives welcome the opportunity to consult with you on blasting problems.

### HERCULES POWDER COMPANY

Explosives Department, 974 King St., Wilmington 99, Del. Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.





FULL DEPTH VIBRATION is a vital part of laying high strength 19 inch concrete pavement for a 15,000 foot runway at Edwards Air Force Base, California. Thorough vibration by VIBER electric paving vibrators mounted behind the spreader permits fast and accurate finishing of the harsh mix necessary to develop high strength required.

## Paving vibrators speed concrete handling in longest runway

Full depth internal vibration consolidates and speeds easy finishing of low slump, high strength concrete in the 15,000 foot runway now under construction at Edwards Air Force Base, in Southern California. A battery of VIBER paving vibrators mounted behind the spreader provides thorough vibration for the full width and depth of the 19 inch thick runway, believed to be the longest ever built.

PURPOSE OF THE VIBRATION
is to produce a uniform, high strength
slab which will support modern heavy
bombers and withstand the searing



THREE INCH HEADS spaced across the slab thoroughly vibrate the harsh mix. Operation above 10,000 rpm assures maximum compaction and highest quality pavement. Note simplicity of respacing vibrators by loosening U-bolts and sliding along supporting pipe.

blast of jet engines. Thorough vibration also makes it easy to handle a mix so dry it can be finished without delay. This keeps length of the equipment train to a minimum and permits better supervision of working crews.

• CONTRACT FOR THE JOB was awarded to a joint venture of R. A. Westbrook, Morrison-Knudsen Company, Inc., and Ford J. Twaits Company. It calls for 411,000 cubic yards of concrete in the runway; associated taxiways, and warmup aprons. Full width, full depth vibration on the job is in accordance with specifications similar to those covering current construction or modernization of Air Force installations in Nebraska, Missouri, Louisiana, Arizona, New Jersey, and even overseas.

 VIBER paving vibrators used on all these jobs are based on an original VIBER design used successfully on airports and highways in the United States and abroad, since 1943. They are another example of the progressive design and development that keep VIBER a leader in the vibration field.

For information on the complete VIBER line of external and rubber tipped internal vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, California.

Dept. 68



CONCRETE VIBRATORS SINCE 1931



(Continued from page 204)

reached. The digger provides angular adjustment of the drill head in two directions and permits operation at any angle through a full 360-deg range. Two models are available. A compact power take-off unit for Jeep or power take-off truck mounting and a skid-mounted unit with self-contained power plant.—Acker Drill Co., Inc., Scranton, Pa.



Get PRE-BID estimates by competent, practical construction men who have specialized in all phases of dewatering for up to 26 years.

All estimates based on careful analysis of sub-soil borings, on actual experience in the soils to be dewatered, and on site investigations.

When soil conditions indicate other dewatering methods are more practical and economical, we are qualified to advise other proven methods.

### **26 YEARS EXPERIENCE**

Foundation Equipment

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# There is no easier way to load a trailer...

## than the TALBERT WAY

Removing the gooseneck to permit easy front end loading





No hard-to-handle ramps to place in position—simply "drive the crane on"

Replace the gooseneck, and move gooseneck into fifth wheel position



Shown here a Talbert Trailer Model T3D—60—RG-RA, owned by the BUCTON CONSTRUCTION CO., Hazen, Arkansas



60 Ton Capacity, drop side deck, removable gooseneck, removable third axles . . . with single axle jeep dolly.

Write for New Talbert Catalog No. 104



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers.

THE TALBERT-WAY IS THE EASY WAY

### Booklet HOW TO CLEAR BRUSH Reveals AT SIX-TO-ONE SAVINGS

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### The POWER PRODUCTS Lightweight packs more power per pound

When it comes to lightweight power nothing can touch this engine. Not only is it amazingly lightweight, but it has every im-

sure long, dependable per-

For portable equipment, you can't find a better engine for lightweight and dependability.

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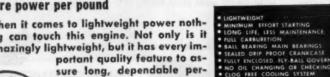


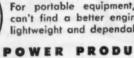
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BIG JAW CRUSHER-The newest addition to the Grizzly-King jaw crusher line is a 42x48 eccentric crusher, claimed to be the largest of its kind in the world. It has a capacity of 1,200 tons per hr at the largest setting and the 5-in. opening will handle about 800 tons per hr. This machine is fabricated with a special laminated design to assure the extra strength and durability needed to attain such high capacities.-Lippman Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis.



IMPROVED POWER FLOAT-Designed for fast, efficient compactionfloating of harsh, dry concrete or asphalt mastic mixes is the improved Kelley Compactor Power Float. It's a heavy-duty machine consisting of a vertical power head which provides power through special alloy steel gearing for rotation of the heavy float disk. Four cast steel hammers are pivoted on shafts attached to the body of the machine. The heads of these hammers ride on a cam track on the balanced float disk. As the disk rotates, the four hammers are raised and dropped. The heavy-rapid impact of the compacting hammers on the rotating disk, compacts, densifies and floats the slab to a smooth level surface for proper finishing.—Kelley Ma-chine Div., Wiesner-Rapp Co., Inc., 1600 Seneca St., Buffalo 10, N. Y.





## **Anchor Ducts to Concrete and Cut** Your Costs Up to 80% with the REMINGTON STUD DRIVER



"Paid for itself in just two jobs." Reports like this keep coming in from sheetmetal men about the Remington Stud Driver. They're setting up to 5 studs a minute in concrete and steel with this amazing powder-actuated tool. Savings run as high as 80%, compared to conventional fastening methods!

Economy like this gives the contractor a definite advantage. He can bid lower, be more competitive. And he can tackle almost any fastening job. Completely self-powered, the Stud Driver requires no outside source of power-no troublesome wires or cables. Its light weight and compact size bring every job within easy reach.

It will pay you to get all the facts about the Remington Stud Driver. It's been test-proved to be the world's speediest fastening system and can help you get the job-do the job-faster and easier than ever before. Just send in the coupon for complete information.

### QUESTIONS YOU ARE ASKING

#### QUESTION:

What caliber cartridge powers the Stud Driver?

Six 32-caliber power loads are available. Colored heel caps make it easy to select the best power load for each job.

"If It's Remington-It's Right!"



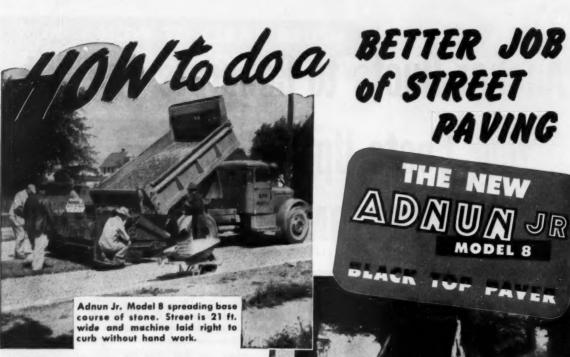
#### MAIL THIS COUPON TODAY

Industrial Sales Division, Dept. C.M.E.-4 Remington Arms Company, Inc. Bridgeport 2, Connecticut

Please send me free copies of the new booklets showing how I can cut my fastening costs.

Position

Firm.



HERE is a street job in New York State. The Adnun Jr. handled all of the spreading on this from stone base to finished top course. The Adnun Jr. is a highly engineered, quality, precision, tow-type paver that is far superior to the usual hopper on wheels now being used for non-specification work. The advantages of the Adnun Jr. assure, greater accuracy in course thickness, improved density and better joints with a material reduction in hand work.

Its ability to maneuver without load saves time on relocations. The powered Breaker Bar in the Hopper assures better compaction. The Oscillating Toothed Cutter Bar, with overlapping action, cuts the course off at the right thickness without troweling fats to the surface and makes a tighter joint without hand work. A smooth course surface which approaches that of larger pavers, results from the Adnun principle of Continuous Course Correction.

These are only a part of the long list of Adnun Jr. advantages in performance and design. You should know all about them, Let us send you a folder on it today.

PAVING

with oil, Adnun Jr. laid the asphalt surface in two courses in 7 ft. sections. The machine is here laying the binder.

The Adnun Jr. is easily moved. A removable Trailer Hitch permits lifting the unit with the truck body hoist and towing it anywhere with the paver rolling on its own front wheels.



BLACK TOP PAVER

BLAW-KNOX FOOTE CONSTRUCTION EQUIPMENT DIVISION
1910 State Street,
NUNDA, NEW YORK

### New PUBLICATIONS From MANUFACTURERS

V

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

PNEUMATIC TOOL ACCESSORY— A 12-p folder illustrating and describing pneumatic tool accessories, such as moil points, clay spades, as phalt cutters, carbide rock-drill bits and drill steel lines, including speci-

and drill steel lines, including specifications of all tools, has just been issued by Brunner & Lay, Inc., 9300 King St., Frankin Park, Ill.

UNDERGROUND AIR-OPERATED CORE DRILLS—Bulletin No. 340, a 4-p., 2-color booklet, illustrates and describes two sizes of air-operated machines for either core drilling or blast-hole drilling underground, together with complete working data. A copy of this bulletin will be mailed free upon request from Sprague & Henwood, Inc., Scranton, Pa.

HILOADER LITERATURE—An 8-p booklet well illustrated shows the Athey HiLoader working on a variety of applications, and reveals how it is possible to get high production on these jobs. Copies of this catalog can be obtained without cost from either Caterpillar dealers or by writing to Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

HARDFACING ALLOYS—Hardfacing and build-up rods and electrodes are described in a new 48-p 2-color catalog just released. More than 70 photographs and listing of full metallurgical and physical properties are included for the four automatic and 15 manual rods and electrodes described, together with typical applications. You can get a copy of this booklet from the American Manganese Steel Div., 389 E. 14th St., Chicago Heights, Ill.

FLAT TRANSMISSION BELTS—A 4-p illustrated bulletin featuring flat transmission belts, and their applications, together with recommended uses, specifications, construction data, sizes and lengths can be obtained from the Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., 1932 Oliver Bldg., Philadelphia, Pa.

TOURNAPULL JOB STORIES — Model C Tournapull job descriptions from around the United States are assembled in convenient booklet form just released by LeTourneau-Westinghouse. Informative data on haul length, load time and cycle time accompany each illustration. Ask for Form TP-347 from LeTourneau-Westinghouse Co., Peoria, Ill.



### PROTECTION . . .

Goodall clothing, boots and shoes are *guaranteed waterproof*. Selected materials and exacting workmanship make them completely reliable for maximum head-to-toe protection.



### COMFORT . . .

Goodall coats, jackets and overalls are full-cut, "roomy" garments, allowing complete freedom of movement. Goodall boots and shoes are famous for their "easy-to-wear" design and construction.

### LONG WEAR . . .

Durability is another reason for the wide popularity of Goodall clothing and footwear. No matter how hard they're worn, you can count on longer time between replacements.

### COATS - JACKETS - OVERALLS

Durable, full-cut garments in rubber, oiled and latex, for every kind of work. Reinforced where extra strength is needed, without impairing comfort. Style 338 Coat is a long-time favorite . . . double back; corduroy-lined collar; length 49".

SUITS -Style 80 Jacket with Style 81 Overall makes the ideal shaft suit. Other jacket-andoverall suit combinations to meet every preference or job requirement.

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### "TOE-SAVER"® BOOTS

"Hardboiled" Safety Hats in fibreglass or aluminum. Light weight and comfortable, yet providing greatest possible head protection. Exceed highest established requirements for strength; heat and moisture resistance; and dielectric tests.

Smooth, tough, flexible black rubber, heavy duck lined. Cushion insole. White cap over reinforced steel safety toe tested to withstand 2,000 lbs. pressure. Tiretread soles. Hip, Style MB-346. Storm King, Style MB-780. Short, Style MB-946. Now with permanently marked size numbers.

The "Toe-Saver" feature is also available on a variety of work shoes, and on our Contractors' Mucker Boot.



Contact Our Nearest Branch for Details and Prices



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### LOW COST ALL-PURPOSE TRUCK-CRANE



Here's an inexpensive crane that fits on the frame of almost any truck, 2 tons or larger, converting it to a versatile, truly mobile truck-crane. The Pitman Hydra-Lift, developed by a contractor, has a hydraulic boom that swings in a complete 180-degree arc, lifts through an arc of 100 degrees and telescopes from 12 to 22 feet. Contractors, counties, cities-hundreds of them—are using Hydra-Lift for lifting and hauling jobs that formerly required far more expensive cranes. Hydra-Lift runs from job to job at normal truck speeds; lifts loads up to 6,400 pounds; requires only 40" behind the truck cab, leaving the bed free for normal payloads, or for trailer as shown above. Write today for complete information!

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SHAWNEE Manufacturing Co., Inc.



SERVICE MOVIE-A new strip film with sound entitled "Servicing the Series '71' Cylinder" covers inspec-tion procedures to be followed in determining the re-usability of cylinder parts during engine overhaul and the step-by-step processing needed to restore such parts to factory-set standards. This film can be obtained from Detroit Diesel distributors and dealers, or by writing to Detroit Diesel Engine Div., General Motors Corp., 13400 W. Outer Dr., Detroit

ELECTRIC GENERATING PLANT -A 16-p, 2-color edition in pocketsize format is the latest issue of Power Points Digest that describes various stand-by and mobile applications of the new Model CW electric generating plant. It covers all types of uses of generating plants and can be obtained from D. W. Onan & Sons, Inc., Minneapolis, Minn.

AIR COMPRESSORS-A new catalog on air compressors covering 27 sizes and five types has just been released by Binks. Compressor buyers will find the data in this 16-p booklet helpful in selecting the proper unit. Write to Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill.

STUD WELDING LITERATURE-A booklet describing the methods of KSM Korr fastening to simplify roofing and siding installations is available from KSM Products, Inc. The same manufacturer also has a new booklet titled Stud Welding which devotes 8 pp to describing equipment and applications. This material, together with a booklet describing the facilities of the manufacturer, can be obtained by writing to KSM Products, Inc., Merchantville, N. J.

TRENCHING EQUIPMENT-A 4-p bulletin discusses the complete line of Cleveland trenching equipment. It gives simple, quick comparisons of the digging capacity and specifi-cations of Models 92, 95, 110 and 140 of the Cleveland line. Also described are the Model 80 Backfiller, the Model 320 Trencher and Model 190 Backfiller. Copies of this booklet can be obtained from the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio.

SUPER-POWER V-BELTS-Claims for a 40% increase in horsepower capacity over standard belts, resistance to shock loads and length stability, are set forth in a folder outlining the advantages of new Super-Power V-Belts. The literature gives a complete list of sizes and new belt numbers applicable to Super-Power V-Belts. Specify Bulletin No. 6628.—Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N. J.



PIELD TESTS prove regular service brake linings last up to 8 times as long in trucks equipped with Allison TOROMATIC BRAKES. But increased brake lining life is only part of the story. The new TOROMATIC BRAKE also enables safer downhill hauling for heavy-duty trucks—speeds job-cycle time—boosts production—cuts maintenance costs.

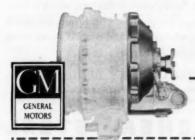
On downhill hauls, the TORQMATIC

BRAKE saves the regular friction brakes for complete stops or "snubbing" on curves. There are no wearing parts to burn up or wear out. Oil does all the braking work. The Torqmatic Brake is installed as an integral part of the drive line in trucks equipped with Allison Torqmatic Drives—uses the same oil as in the Torqmatic Converter so there are no freezing problems in winter.

### Proved in field tests

A Western contractor hauling 34-ton loads down 7% grades reports the TORQMATIC BRAKE helped increase daily round trips 50%—let him safely triple downhill hauling speeds—extended brake lining life 8 times.

If you're hauling on hilly, mountainous downhill runs, you can cut costs and increase production with Allison's TORQMATIC BRAKE. For full details, fill in the coupon and mail it today.



Allison

### TOROMATIC BRAKE

Newest Member of the Torquatic Drive Line

### ALLISON DIVISION OF GENERAL MOTORS

Box 894T, Indianapolis 6, Indiana

Please send me Bulletin SA 1026 with full details on the new Allison TOROMATIC BRAKE.

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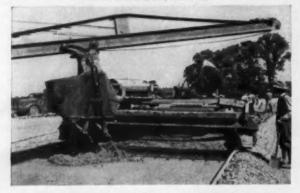
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Concrete paving and finishing machines move along the Turnpike Extension, near Fort Washington, Pa. Contractor, C. J. Langenfelder and Son, Inc., Baltimore.



First-course pouring at King of Prussia. Contractor, George M. Brewster Co., Bogota, N. J.



Two Turnpike field engineers, Ralph Danner, senior mixer inspector, and F. J. Shoemaker, resident engineer, inspect a Bethlehem Dowel Unit immediately prior to pouring at Fort Washington.

## **360 Miles Without a Stop Light**

With the completion of the 33-mile-long Delaware River Extension of the Pennsylvania Turnpike, this "grand-daddy" of superhighways will stretch 360 miles across the Commonwealth, enabling motorists to travel from the Delaware River, by-passing the city of Philadelphia, to Pittsburgh and the Ohio border without a single traffic light or cross-road intersection.

The work now in progress will extend the highway east to a point on the Delaware River where a new bridge and highway link will connect with the New Jersey Turnpike, thus forming a limited-access expressway from Metropolitan New York to Pittsburgh and beyond.

The pictures show paving work on the new extension at Fort Washington and King of Prussia, near the present eastern terminus of the highway. Bethlehem, which is well-represented all along the Turnpike, is furnishing dowel units, reinforcing steel, bar mats and other highway steels for the Delaware River Extension.



On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

### BETHLEHEM STEEL

Bethlehem Products for Bridges and Highways include: Dewel Units • Reinforcing Bars • Bar Mats • Guard Rail Guard Rail Posts • Wire Rope and Strand • Pipe Hollow Drill Steel • Spikes • Bolts and Nuts Timber-Bridge Hardware • Tie-Rods Sheet- and H-Piling • Fabricated Structural Steel



Inspecting the paving at King of Prussia are F. W. Engelman, resident engineer; Bing Matcher, Turnpike inspector, and Felix Mandato, concrete foreman.

LIFE-SAVING TIPS—A new folder that gives 17 life-saving tips for improving wire rope service is titled "How to Get More Work Out of Your Wire Rope." The reading matter is brief, but pertinent, and has suggestions for correct handling and storing of wire rope. Copies are available from Leschen Wire Rope Div., H. K. Porter, Inc., 5909 Kennerly Ave., St. Louis 12, Mo.

A MESSAGE TO CONTRACTORS—A recent publication titled "Cummins Cuts Contractors' Costs" shows the versatility of Cummins diesels in the construction industry. Profusely illustrated, the booklet carries on-the-job stories on large and small projects. Ask for Bulletin No. 5382 by writing to the Cummins En-

gine Co., Inc., Columbus, Ind.

NEW SERVICE PLAN - Here's a new service plan for wire-rope users that should be welcomed by the trade. Named the Yellow Strand Speedi-Service Plan, this program will be administered by more than 400 Broderick & Bascom distributors. The core of the plan is a record file of equipment users' wire-rope needs as determined by a survey taken by distributor salesmen or by facts supplied by the user and transferred from the survey form on to permanent record cards, one for each piece of equipment. At the time of transfer, distributor stocks are checked, and any ropes that may be needed in the future are ordered for stock. When a rope requires replacement the user just phones his distributor telling him what machine needs the rope and what rope it is. The distributor's rope men consult the handy record file and can tell in an instant the exact length, size, construction, grade, and lay of rope needed. The plan should save considerable time for the equipment owner and give him immediate service. Survey forms can be obtained from distributors or by writing the Broderick & Bascom Rope Co., St. Louis, Mo.

COLD-POURED JOINT SEALER— An informative data sheet describ-

An informative data sheet describing cold-poured joint sealer for concrete pavement, which is called "Flintkote CPS," has just been made available. The cold-poured type is a rubber asphalt blended compound which is pumped from a drum by air pressure and extruded into the joints or cracks through a narrow mouth nozzle. Flintkote Co., Industrial Products Div., 30 Rockefeller Plaza, New York, N. Y.

DERRICKS, HOISTS, WINCHES—Sixteen pages of material describing derricks, hoists, winches and elevating and hoisting equipment make up a new catalog just released by the Sasgen Derrick Co., Dept. C 30, 3101 Grand Ave., Chicago 32, III.

3



MALSBARY 250 steam cleaner cleans heavy grease, caked clay, dirt from Link-Belt shovel in 4 hours.

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# THORITE patching mortar and two THOROSEAL applications rejuvenated this Virginia building



Constant weather exposure over the years caused the masonry of this building to disintegrate. If this unsightly condition had not been corrected it would have finally imperiled the structure of the building.



All concrete spandrel beams, columns, window heads and brick sills were patched and brought flush with surrounding surface by the use of The THORO System product, THORITE, a twenty-minute set, nonshrink, patching mortar. Two brush coats of THOROSEAL were then applied over entire reinforced concrete surfaces, to prevent further disintegration, also to beautify building.

CONTRACTOR: Southern Waterproofing and Concrete Company, Inc., 1704 Arlington Road, Richmond, Virginia.



SELF-LOCKING DEVICE FOR STEEL SCAFFOLDS—Here's a bulletin that describes a new "Slidelok" self-locking device for use with "Trouble Saver" sectional steel scaffolds. This device is used to fasten diagonal cross-braces to scaffolding frames and is claimed to speed up direction and dismantling. You can get the whole story by asking for Bulletin PSS-32 from the Patent Scaffolding Co., Inc., 38-21 - 12th St., Long Island City 1, N. Y.

LIGHTWEIGHT PIPE—A new bulletin No. 507 shows typical applications of lightweight lockseam-spiral-weld pipes and fittings manufactured by the Naylor Pipe Co. Included are standard specifications on pipe from 4 to 30 in. in dia together with data on fabricated fittings, flanges and connections to meet all pipe requirements. Write to Naylor Pipe Co., 1230 E. 92nd St., Chicago 19, Ill.

LIGHTWEIGHT SPUR GEAR HOIST
—A 4-p bulletin describing the Challenger—a lightweight spur gear hoist of formed steel construction that features easy portability and resistance to shock load breakage—can be obtained from the Coffing Hoist Co., Danville, III.

WELDING SLIDE FILM-Air Reduction has just produced a new sound slide-film on safety in the use of oxyacetylene cutting and welding equipment. The film, titled "The Guy Behind Your Back," is a fundamen-tal approach to the factors affecting safety when operating oxyacetylene welding and cutting torches and machines. It features a light, but not comic, approach planned to make the serious business of safety in welding easy to absorb. This 20-min film may be seen by making arrangements with your local Air Reduction office or by purchasing a copy of the film for \$15 each from the Air Reduction Sales Co., 60 E. 42nd St., New York 17. N. Y.

340-p GENERAL CATALOG—Here is a man-size catalog—340 pp of general technical information, reference tables, and complete information on the Kaiser Steel Corporation's iron and steel products. It is being distributed on a limited basis to western architects, engineers and manufacturers. Address your request to Kaiser Steel Corp., 1924 Broadway, Oakland, Calif.

PUMPS AND MOTORS—This bulletin points out features and gives selection data for the complete line of Hydreco oil hydraulic pumps and motors. Outstanding feature of this bulletin is a large cutaway illustration that shows the inside of the pump motor. Bulletin number is 139, and it can be obtained from the New York Air Brake Co., Cleveland, Ohio



#### ENGINEERING SIDELIGHTS OF L'AIGLE DAM:

Construction of this striking Hydro-electric plant, spanning the Dordogne River in France, is a tribute to the ability of modern engineers. Located at the base of a narrow canyon, the dam skillfully combines practical design and beauty with great strength and economy of construction. The gravityarch dam is 90 meters (295.2') high with machinery housed under the spillways to conserve lateral space. Machinery area and spillways are incorporated into the main structure to further cut construction costs. The famous curved "ski jump" spillways not only add distinctive beauty, but discharge water away from the toe of the dam to avoid erosion. These unique two-purpose curves made possible a lighter dam requiring less time and material to erect.

## **Curved Crushing Surfaces of Traylor TY Gyratories**

**Help Solve Your Production Problems** 

Traylor original curved crushing surfaces are engineered to meet today's production requirements. They apply power as a direct crushing force to produce a more uniform cubical aggregate on less power per ton. This efficient use of power also adds to your profit picture by reducing wear and replacement costs. The curved surfaces of Traylor Crushers also reduce lifting and churning . . . choking and packing of That's because each material in the crushing chamber. zone in the crushing chamber has greater capacity than the preceding zone . . . aggregate has free fall through the allround bottom discharge. Investigate the advantages of this compact, efficient secondary crusher. Traylor free bulletin 7112 gives complete specifications and illustrations. Send for your copy today.

#### TRAYLOR ENGINEERING & MFG. CO. 637 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York • Chicage • San Francisco CANADIAN MFRS.: Canadian Vickers, Ltd., Montreal, P. Q.



Built in six sizes with feed openings from 3" x 22".













Rotary Kilns

Secondary Gyratory Crushers

# Tough jobs go easy on your trucks

- when they're Hydra-Matic GMC's!



Hauling giant stumps out of the Florida swamps, hub-deep in muck, is a job taken in stride by this GMC with 8-speed Truck Hydra-Matic.

Be careful-drive safely

TRUCK-KILLING work is no threat to GMC's sensational new 8-speed Hydra-Matic trucks.

Every start is clash-free—joltless. No matter how hefty your load—or quick your getaway —Truck Hydra-Matic's fluid coupling blocks shock-loading damage to axle or drive line.

They shift for themselves with such perfect timing that engine strain's impossible. They can't have clutch troubles, for there's no conventional clutch. Replacements — or repairs —are a thing of the past.

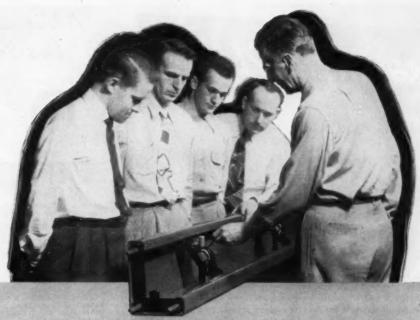
With no complicated shift patterns to master, driver-training time shrinks from weeks to minutes.

Ask yourself how long you can afford to bid against competition that can deduct all Hydra-Matic's savings from operating costs! Then see your GMC dealer—and find out how little more it costs to put longer-lasting super-trucks like these to work.

\*Standard on some models; optional at extra cost on others.

Get a modern truck!

GMC Truck & Coach Division of General Motors



## THE LATEST DEVELOPMENTS IN HIGHWAY AND AIRPORT FORMS

- All paving forms should perform two distinct functions. First, they should accurately confine the limits of the pour, and, secondly, they must act as track, supporting and steering the massive machinery required to prepare the subgrade, spread, finish and cure the slab.
- The ability of Heltzel Forms to best fulfill these two basic functions is the big reason why they are preferred by leading contractors everywhere. For behind the Heltzel name is almost half-a-century leadership in the design and manufacture of steel forms. This "know-how"—has enabled Heltzel to constantly produce practical, workable, "form setter's" forms that set fast, align perfectly, hold steady and firm. And "Heltzel Built" means they're precision fabricated of special analysis carbonmanganese steel, pre-stressed to

withstand heaviest loads without failure.

- The form illustrated above is the latest design of the popular HELTZEL DUAL-DUTY FORM. (Two forms in one for two different slab thicknesses.) It features extra-wide, two-way stake pockets and restyled end supports which add up to the strongest form in the field. The triple-prong slide locking arrangement and single direction wedging gives form setters perfect alignment with a minimum of effort.
- This long experience and constant experimentation make it just common sense to see the Heltzel representative in your area before you purchase form equipment. If you don't already have a complete file of Heltzel Form literature, use the coupon below.

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Company

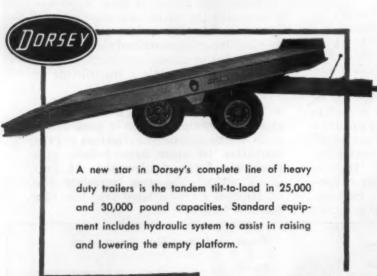
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# HOMELITE CARRYABLE PUMP on YOUR Job and Eliminate Delays

On any repair or construction job, water causes delays. And delays cost money . . . particu-

larly when men have to stand around idle.

Put a Homelite Pump on the job and watch those delays disappear. In no time it gets to the job . . . no trucking problems, no planking, no pushing, no pulling. One man carries it and sets it up right where you need it. Quick starting . . . and with the

fastest self-priming...a Homelite will pump up to 15,000 gallons per hour without clogging or trouble. It draws water 28 feet and of great importance it will keep seepage at strainer level automatically.

Figure it out, with the time . . . which is money . . . saved by a fast-action Homelite it wouldn't take many jobs to pay for a Homelite. Possibly, one job would be enough. Write for a free demonstration.

Manufacturers of Homelite Carryable Pumps • Generators Blowers • Chain Saws



1004 RIVERDALE AVENUE . PORT CHESTER, N. Y.

Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Quebec.



No place for a motorist—yet. This photograph shows the difficulties encountered in building a road through Catskill Mountains region.

### Carving a path for New York Thruway



Wagon drills make the dust fly as Bethlehem hollow drill steel bites into the limestone. This steel provides economical drilling, time after time.

One of the major problems involved in constructing a 22-mile section of the New York Thruway in the Catskill Mountains, between Ravena and Palenville, N. Y., was the removal of approximately 2,000,000 cu yd of medium-hard limestone.

The contractor for the rough grading, as well as for the paving which followed, was The Savin Construction Corp., East Hartford, Conn. In the rock-removal operations, the Savin organization used wagon drills equipped with Bethlehem hollow drill steel, 1½ in. round, fitted with carbide-insert bits. The approximate footage drilled was 1,500,000 lineal feet, with some of the blast holes going as deep as 30 ft. The project manager, B. A. Wilder, reported satisfactory results in every way with Bethlehem Hollow.

Yes, you can always count on good performance with Bethlehem Hollow, even under the toughest drilling conditions. Bethlehem Hollow has a wide quenching range, making it easy to heat-treat for the ideal balance of hardness and wear-resistance. It makes long-wearing threads, and tough shanks. It's well able to take the fast, hard blows of modern rock drills.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Two Grades of

## BETHLEHEM HOLLOW DRILL STEEL

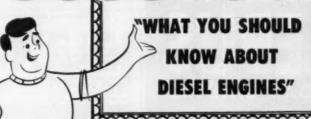
CARBON · ULTRA-ALLOY (chrome-moly)



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NEW P&H COLOR SOUND FILM

It's an all-new sound-slide film . . . that provides clear, concise answers to "What you should know about Diesel engines." Give it a showing, and it will give you a better A to Z understanding of the diesel engine — how it operates; how it compares with gasoline engines; two versus four cycle diesels; why P&H Diesels perform better on tough jobs; how they save money on both operating and maintenance costs.

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DIESEL ENGINE DIVISION

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FOR INDUSTRY AND AGRICULTURE

with the exclusive Straddle M o u n t e d Pinion . . .

FUNK PRODUCTS INCLUDE:

Right-Angle Take-Offs. Front End Take-Offs. Jack Shaft Extensions.

Ford Tractor Conversion Kit adapts 6 Cyl. Ford engine, double power. (See picture below.)



Here is a new NAA Golden Jubilee Ford Tractor converted with Funk NC Kit, other kits for an Ford Tractor. This exclusive Funk development assures complete gear tooth contact at all times by providing a pinion with a taper roller bearing support at each end driven by an input shaft

with a lubricated floating spline, eliminating misalignment from improper installation or load deflection . . . some of the many reasons why you can expect longer, trouble-free service from FUNK Gear Reductions. Fit all SAE flywheel housings. Special ratios or special adaptions of standard units supplied on small orders. For keeping old equipment on the job economically, write for catalog and prices of Funk Power Take-Offs and Gear Reductions.



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Handle and

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#### WHERE TO BUY

#### ROAD CONSTRUCTION COMPANIES

• We offer for your consideration a winch operated dump trailer that is capable of handling larger loads cheaper and faster than anything on the market today.



Our coverage on this item is: New York, New Jersey and New England.

Our representative will meet with you anytime.

TRANSIT SALES & SERVICE, INC. 23 SOUTH STREET, DANBURY, CONN. FRANK T. MEE, JR., TEL. 3-4437

#### STOP that WATER

With FORMULA NO. 640, a clear liquid which penetrates 1" plus in concrete, brick, stucco, plaster, etc. Seals out water, dirt. Holds 20' head. Use outside and in. Preserves all absorbent materials. Sold 14 years. Quick, economical, sure. \$3 in 55's. Free sample. Bee Sweet's. HAYMES PRODUCTS CO., OMAMA 3, NESS.



#### tells you the scaffolding you need for every job.

Tells you in seconds the number of frames and cross braces you need for most jobs. Saves you hours of "desk work." Helps you figure each job closer. Get yours now. FREE! Write today!

# WACO the world's fastest scaffolding CUTS YOUR COSTS THESE 4 WAYS



SPEEDLOCK saves erection time. Locks cross braces instantly and with complete safety. Nothing to lose, slip or come off.



FLOATING COUPLING PIN lets men set frame one leg at a time. Saves time.



WACO MASON'S ACCESSORIES

T-Jacks, Block Lifts,
Mortar Board Stands,
Scaffold Brackets, Waco
"Speedset" All-Steel Shores.



RENTAL SERVICE—Stock the units you need most of the time...rent special equipment as needed from your Waco Distributor.

Write for his name and address



3560 WOODALE AVE.

Licensees: Waco-May Co., Los Angeles, Calif. Armson Iron Works, Windsor, Ontario A few good Waco Distributorships available. Write.

# 6-WHEEL SALES LEADER FOR 18 STRAIGHT YEARS



New INTERNATIONAL Model RF-194 LOADSTAR®, GVW rating, 38,000 lbs. 157, 175, 193 and 211-inch wheelbases, Choice of gasoline, LPG or diesel power.

**INTERNATIONAL** pioneered the 6-wheel truck 18 years ago to enable heavy-industry and off-highway operators to haul bigger payloads.

Since then—every year—International has been the sales leader in the 6-wheel field. This leadership was won and held because owner records prove International 6-wheelers operate at lowest cost in roughest, toughest service.

International Harvester's engineering experience has led to the development of the world's widest choice of models, engines, transmissions...permitting a truck-to-job specialization unmatched in the 6-wheel field.

Your International Dealer or Branch will show you why International 6-wheelers will save you money. Call today and get full facts. Time payments arranged.

#### AMERICA'S MOST COMPLETE 6-WHEEL LINE-23 MODELS

GVW ratings, 22,000 to 90,000 lbs. Engines from 130 to 356 horsepower. Choice of gasoline or LPG power. Diesel engines available in models with GVW ratings of 30,000 lbs. and over. Transmissions and axle ratios to meet any requirement. America's most complete truck line—170 basic models from ½-ton pickups to 90,000 lbs. GVW off-highway models.

INTERNATIONAL HARVESTER COMPANY . CHICAGO



International Harvester Builds McCORMICK\* Farm Equipment and FARMALL\* Tractors... Motor Trucks... Industrial Power... Refrigerators and Freezers

INTERNATIONAL TRUCKS

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#### SEARCHLIGHT SECTION

EMPLOYMENT: BUSINESS

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#### GALVANIZED

2 oz. Coating Both Sides

Made of Copper Bearing Steel to U. S. Gov't Specifications MIL-P-236-B. The only fittings necessary to fasten the flange-type sections together are the nuts and bolts supplied with the sections.

8	Gauge	36"	Diameter	
8	Gauge	42"	Diameter	
8	Gauge	48"	Diameter	
10	Gauss	3611	Diameter	

All Brand New-At Less Than Half Current Mill Prices!

> QUANTITIES AVAILABLE and Quotations on Request

#### J. C. BERKWIT & CO.

551 Fifth Ave., New York 17, N. Y. Phone: MU 2-2214 Cable: BERKWITCO

#### SHEET

Get the exact lengths and sections you need from Foster-all standard makes, delivered on time-and at Foster's standard low rental rates. Also Rental Pile Hammers & Extractors.



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#### ENGINEERS-FOREMEN-OFFICE MEN Learn latest methods to organize and run work. Prepare for the top jobs. Send post card for details

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REPLIES (Box No.): Address to office nearest you NEW YORK: \$50 W. 42 St. (86) CHICAGO: 520 N. Michigan Ave. (11 SAN FRANCISCO: 68 Post St. (4)

#### EMPLOYMENT

#### SELLING OPPORTUNITY OFFERED

FLUID DRIVES Rebuilt Bearings, new Carbon and Bellows and Welded Reassembly, Servicing Fork Lift Trucks and other Construction Equipment using Fluid Drives, Diatributorships available, C & R Products Co. 2230 Harmon St., Brooklyn, N. Y.

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PRESTRESSED PRECAST Concrete develop-ment engineer registered, to help initiate line for contractor or mgfr. Capital invested only if necessary future promotion or participation more important than initial salary. PW-2039, Construction Methods & Equipment.

#### EQUIPMENT--used-surplus

FOR SALE

Used concrete pavers, truck mixers, and pump-crete. 19 Rector Street, Room 1205, New York City, N. Y. Phone: WHitehall 3-6141.

#### there is anything you want . . .

that other readers of this paper can supply

or-

#### something you don't want

that other readers can use, advertise it herein the

> SEARCHLIGHT SECTION

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#### CONSTRUCTION

## AND EQUIPMENT

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# **BIGGEST NEWS IN 1954**



- · LOWER IN WEIGHT
  - Weight reduced nearly 1000 pounds
- . LOWER IN HEIGHT

Overall height reduced to get under bins with low headroom

. LOWER IN PRICE

You save hundreds of dollars and still get top quality.



New PREMIUM Model



Contact your Smith dealer — today! Ask him for all the facts about this new PREMIUM model built to the usual Smith high standards of quality. Inquire about the cost. You'll be amazed how *much* truck mixer you can get for so little money.

The T. L. SMITH COMPANY

2851 NORTH 32ND STREET . MILWAUKEE 10, WISCONSIN, U.S.A.

Affiliated with Essick Manufacturing Co., Los Angeles, California

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . LOOK TO SMITH

# Methods Memo . . .



DIRT BOILS UP into Tournapull bowl as a Tournatractor gives it a fast assist. Nothing unusual about that, except that this scene is far away on a highway job in Turkey. Muzaffer Budak is claimed to be first private contractor there to use rubber-tired earthmovers.

AT OAHE DAM on the Missouri above Pierre, S. D., the U. S. Army Corps of Engineers is following the same plan in effect at Ft. Randall and Gavins Point Dams, both downstream on the same river, by designating a civilian rather than an Engineer officer in direct charge of construction at the site. John Sibert, veteran construction engineer for the Corps, has been transferred from Garrison Dam to take charge at Oahe. George Evans is Area Engineer at Ft. Randall with similar responsibilities, while John Haves is in charge at Gavins Point. All three projects come under the supervision of Col. Thomas J. Hayes. Ill, District Engineer at Omaha.

BIGGEST TUNNEL DIGGER yet devised is being built for Mittry Bros. to excavate the six 25-ft diversion and control tunnels at Oahe Dam on the Missouri River in South Dakota. If the first rig works out right, one or more additional units will be built. Tunnel boring machines are not new, in fact, we're describing one in this issue being used at Dallas, and told about similar units at Ft. Smith, Ark., and Cleveland, Ohio, in our last February and October issues, respectively. But these and former machines have been relatively small. Though details are not yet available, reports say that the big unit being designed for Oahe resembles the Ft. Smith machine. Mittry Bros. hope to put the first unit into service early next fall. Ground at Oahe is treacherous shale.

WHILE WE WERE WRITING the story on the cow palace (page 78) and showing how columns, beams, purlins and wall panels were precast and later hoisted into place, we were reminded about a new booklet that covers a neigh-

boring subject—tilt-up construction. Superior Concrete Accessories, Inc., was approached by several contractors who wanted advice on how to handle tilt-up units for easy placement. Taking notice of the trend in this type of quick erection, the company engineers designed and tested a complete set of accessories to simplify the job.

Included in the package are inserts and angles for pickup, anchors to encase in a slab, and braces that hold panels in a rigid upright position until they're permanently anchored. These latter attachments allow for 4-in. adjustment in either direction and can be fastened to 2x4's, 2x6's or telescopic pipe and slipped in and out of place quickly. They're all described in the company's new 4-p catalog No. 500. Address: 4110 Wrightwood Ave., Chicago 39.

FOUR AIRFIELD SITES in Spain proposed for American bases, are undergoing evaluation by a combination Corps of Engineers-Air Force team to get data for new construction.

The survey party evaluates existing pavements, determines soil types, collects data and samples on soils, gets drainage information and considers areas for new buildings. Findings will be used by the Navy Bureau of Yards and Docks and contractors engaged in the forthcoming construction program.

AL COKER has moved in on the Tecolote Tunnel at Santa Barbara, Calif., in hopes of licking the toughest tunneling job he has encounterd in a lifetime of underground construction experience throughout the United States and Alaska. Coker, who now heads his own firm, Coker Const. Co., of Alaska, and Peter Kiewit Sons' Co. were called

in by Halvorsen Constructors to salvage what they could of the \$4,800,000 contract for driving the 34,000-ft bore for the Bureau of Reclamation. Halvorsen drove all but 4,716 ft of the tunnel when they were stopped by a 3,600gpm inrush of hot water reaching temperatures as high as 112 deg. The steady flow of hot water heated the inside of the tunnel until working conditions became unbearable, and the job was shut down. Coker admits that anything and everything he tries will be an experiment, but he intends first to pump in a whale of a lot of cool air to see what effect that might have. The small bore of the tunnel, about 9 ft excavated dia, complicates the problem.

A PAT ON THE BACK for Memphis Chapter, Associated General Contractors of America, and its hustling secretary-manager, W. W. MacLaughlin, for the fine job they are doing in promoting construction safety. The chapter sponsors safety meetings and contests among member companies and their supervisory forces, but the most consistent job is devoting the front cover of the chapter weekly news bulletin to a practical message on safety. Plugging safety like this week after week, year after year, is bound to produce results.

SEASICKNESS is the latest hazard for construction office workers—at least on Merritt-Chapman & Scott Corp.'s substructure job for the New York Thruway bridge across the Hudson River. Project offices are on a barge moored to shore, and its slight rocking motion has made some of the secretaries queasy. Most of them, however, have quite nice sea legs, according to male personnel.

MC&S has fitted out the 34x170-ft barge with complete facilities for job administration. It houses an office, bedroom and bath for the project manager, a two-bed hospital complete with X-ray machine and full-time nurse, a communications center with radio and telephone facilities, a drafting room, as well as all other necessary offices. A similar barge houses the job shops: Carpenter, blacksmith, machine, cable splicing, etc.

This is the fourth move for the two barges. MC&S first set them up for a bridge job in Washington, D. C., shifted them to the Delaware Memorial Bridge, then to the Norfolk tunnel, and finally to the Hudson. They work out fine, too. As project manager Burt Sanders says, "Tow 'em into place, and you're in business."

how POZZOLITH\* is helping meet concrete requirements...



Fanshaw Dam. Flood control unit located 15 miles northeast of London, Ontario. Consulting Engineers - H. G. Acres & Company, Niagara Falls; General Contractors - Foundation-Mannix Ltd., Toronto. Concrete supplied by Red-D-Mix Co., Hamilton, Ontario.

#### an aid here in producing great durability and abrasion resistance

Pozzolith has proved to be a valuable "tool" in the construction of dams, tunnels, reservoirs, retaining walls, and similar structures because it increases the resistance of concrete to freezing and thawing and lowers permeability. In the Fanshaw Dam Pozzolith also helped meet the important requirement of abrasion resistance.

These are several of the reasons for the wide use of Pozzolith... last year in more than 13,000,000 cubic yards of concrete.

Full information on Pozzolith and "see-for-yourself" demonstration kit sent on request.

\* POZZOLITH ... the cement-dispersing, water-reducing agent, developed by The Master Builders Co. in 1932, which makes available the optimum amount of air in concrete and fully complies with the watercement ratio law. Added at the mixer.

#### CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

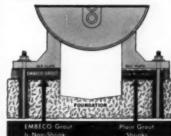
#### MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also sparksafe, non-dusting and easy-to-clean. Noncolored and colored. For new floors and resurfacing.



#### EMBECO . . .

Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, lavel, lesting bedplate contact . . . (3) helps avoid costly shutdowns.



42 MASTE



Subsidiary of American-Marietta Company

# Crashing limestone—jolting road shocks, so they mounted the wheels on TIMKEN® bearings

45 tons of limestone come crashing into this big Easton tandem trailer, which then rides at high speeds over quarry roads to a cement plant.

All the jolting impacts are taken by the Timken® tapered roller bearings which support the wheels on the axles. And, rugged enough to take the heaviest shock loads, these bearings are also fine precision mechanisms.

To get steel good enough for these bearings, we make our own—Timken fine alloy steel. To provide wear-resistant surfaces and shock-resistant cores, the bearings are case-carburized. They're tough on the inside, hard on the outside.

And Timken bearings have inherently high load capacity because the load is carried on a full line contact between rollers and races.

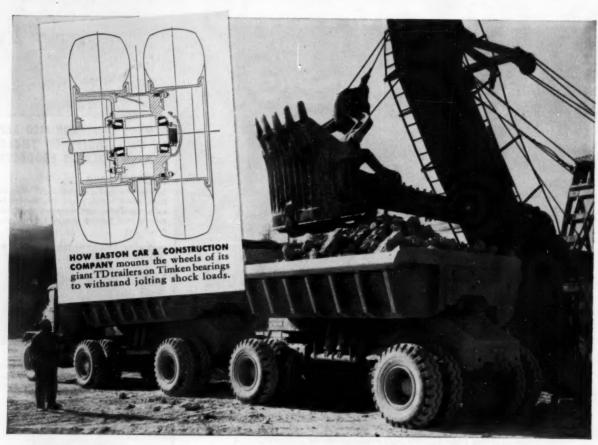
With these Easton trailers on the straight and level, the bearings withstandradial loads. Butturning corners, the bearings also have to take sidewise thrust loads. The taper enables

Timken bearings to take both radial AND thrust loads in any combination.

Timken bearings are a sure sign of quality on the equipment you buy—the equipment you build. Always look for the trade-mark "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.







#### GREATER LOAD AREA

Because the load is carried on the line of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis Timken steels.